

MEN AGAINST THE JUNGLE



by the same author

**PROFILE OF SCIENCE
MEN AGAINST THE DFSFRT**

Laughing Water



MEN AGAINST THE JUNGLE

RITCHIE CALDER
C.B.E.

Science Editor of the *News Chronicle*

Illustrations by Eric Schwab
by courtesy of the United Nations'
Director of Public Information



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TO

HERBERT STEINHOUSE AND ERIC SCHWAB
AND A FRIENDSHIP WHICH SURVIVED
TEMPERATURE, TEMPERAMENT AND TEMPER

ACKNOWLEDGEMENTS

The acknowledgements must be few because they should be so many.

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INTRODUCTION

Pourquoi?

Father, Mother and Me,
Sister and Auntie say,
All the people like us are We,
And every one else is They.
And They live over the sea,
While We live over the way,
But—would you believe it?—They look upon We
As only a sort of They!
—Rudyard Kipling “Debits and Credits”

IN the teak jungle of Thailand, on the borders of Burma and Laos, there is a colony of erudite termites. They must be, because they have digested, much more thoroughly than I, a pile of authoritative text-books on South-East Asia.

My excuse for jettisoning those tomes at the foot of the tallest ant-hill I could find was that the rain-forest that day was intolerably hot and steamy and those books, which I had selected so carefully as the *vade mecum*s for my journey had become a physical burden. But there was another reason: I had decided that they were ‘We-and-They’ books, written by ‘Us’ and for ‘Us’ about ‘Them’, and since we on our mission were concerned to look at problems from ‘Their’ point of view, we had developed mirror-minds and the habit of looking at things the other way round.

Men Against the Jungle does not pretend to rewrite such text-books. Indeed it does not pretend to be a text-book at all but the account of an exciting and inspiring experience which I shared with Herbert Steinhouse and Eric Schwab and with other colleagues who joined our mission in the region. And it presumes to draw some important lessons from that experience.

It is an adventure book but, I suggest, an unconventional one. It is a book of exploration, not to discover new lands but to study age-old, human problems. And it must be the most unorthodox ‘Blue-book’ ever written, for it is the report of a United Nations’ Special Mission.

All this calls for some explanation. On the journey itself, I had quite a lot of practice in explaining because Eric Schwab suffers from French logic and there was so much which appeared illogical that, although he has a vivid (and, indeed, lurid) command of French, English and German, the most over-worked word in his vocabulary was 'Pourquoi ?'

We were, after all, a United Nations' mission looking at the problems of technical assistance. Why should we go plunging towards the Equator and get mixed up with the pagan rituals of the erstwhile headhunters of Borneo ? Why was it necessary to photograph Javanese peasants sowing fish among their rice? Or watch them sweltering all day in the scorching sun, making a canal through the volcanic hills? What had UN and its Special Agencies to do with dancing girls, with golden fingernails, in a Buddhist temple? Why was it necessary to go into the teak-jungles to see trees being felled? (Eric's own answer had a mite of truth in it—that the *chef de mission* had a childish ambition to ride on an elephant.) Why photograph people making pottery or (*nom de Daguerre!*) a condensed milk factory in Mandalay? Or women in purdah? And why if we were supposed to be concerned with the rain-forest region of South-East Asia did we have to cross the Khyber Pass into the mountainous deserts of Afghanistan?

I should say at once that Eric indulged in the luxury of logic only in his spare time. From dawn until the light failed—seven days a week—he photographed, tirelessly and unquestioningly, revelling in the wealth of material and enriching the world's records of South-East Asia. Only when he had exhausted the light, the subjects and himself, and when Herbert Steinhause was wrestling with the play-back of his sound-recordings and I was trying to decipher my sweat-blurred notes, did Eric begin to 'pourquoi' and wonder how it would all add up.

The sun will be found in the pages of this book, but perhaps it is as well to state the propositions in advance.

When I completed for Unesco the *Men Against the Desert* tour of inquiry which took me across North Africa and the Middle East, from the Western Sahara to the Salt Deserts of Persia, I was asked by the World Health Organisation to consider a similar journey for them. As a working title, or

operational code-name, we thought of 'Men Against Disease'. For this theme we might have chosen any of the regions of underdevelopment in which WHO operates—Africa, Latin America, Western Pacific, Middle East or South-East Asia.

We chose the latter for many sound reasons. It is the region where nearly a third of the world's population lives (or exists). It is mainly tropical and equatorial, with all that that means in terms of rampant diseases. It presents the most difficult problems, because of the magnitude of its population and the deficiencies of its services. It is the region of the new nations—India, Pakistan, Ceylon, Burma and Indonesia, struggling to justify their new-found independence in the improved welfare of their peoples.

Here one might explain the geographical idiosyncrasy which Eric rightly questioned. Why Afghanistan? Geographers may still have some difficulty in defining 'S.E. Asia' which, until a few years ago, was lumped into 'The Far East', but they would never have such difficulty with Afghanistan—if 'Middle East' has any meaning it certainly includes Afghanistan. But Pakistan, which might be 'S.E. Asia', resolutely claims to be 'M.E.', which brings it into association with the Mohammedan States and, for WHO purposes, under the Regional Office in Cairo. But since Pakistan is the 'Middle East', Afghanistan insists in being in 'S.E. Asia Region' administered from Delhi. Why? Because it is at loggerheads with its Mohammedan neighbour over the disputed frontier provinces, which Afghanistan insist upon calling 'Pushtunistan' and which, it claims, Pakistan expropriated.

So we agreed to go to Afghanistan but insisted that for the purposes of our mission Pakistan should be included in the itinerary and this we duly arranged—through Cairo.

Ceylon was not visited, not because of any political difficulties nor through any discrimination but because a great deal of attention had been paid to the island and much of the kind of material we were to collect was already available.

When we had decided the geographical compass of our projected journey, we began to consider the subject-matter. The discussions at Geneva immediately introduced new and profound considerations. Dr. Brock Chisholm, then Director-General of the World Health Organisation strongly insisted

that 'disease' in terms of a region such as this, could not just be considered as the concern of the medical agency of UN (WHO). It is not only a question of controlling insect-borne diseases, or communicable diseases, or preventing the spread of pestilential diseases, or introducing sanitation or treating cases. Disease, which robs four out of every five people in this region of decent well-being, is a product of many other factors —of malnutrition, of ignorance, and of conditions of living and work. People who are sick cannot work to produce food. People who are malnourished are susceptible to diseases. Sick and hungry people cannot take an intelligent or informed interest in their own betterment and, if they do not, they cannot get rid of disease and malnutrition. They live and work in squalor which encourages disease. And so the Misery-Go-Round rotates in its vicious circle: Disease—Under-Production—Poverty—Ignorance—Malnutrition—Disease.

Hunger is the concern of the Food and Agriculture Organisation ; ignorance, of the United Nations Educational, Scientific and Cultural Organisation ; and conditions of work and of living, of the International Labour Office.

So they agreed to come together with WHO in a joint operation. Then the parent organisation, the United Nations, of which these are the specialised, functional agencies, took an interest. The United Nations International Children's Emergency Fund (UNICEF) is a supply agency dedicated to the great humanitarian purpose of helping the new generation to a better start in life, and it has an important role in the story that is to be told. The United Nations Technical Assistance Board provides funds by which the specialised agencies are able to send experts to give direct help to the under-developed countries and, in addition, through the Technical Assistance Administration, sends experts in those fields not covered by the specialised agencies. Thus 'The Special Information Mission to S.E. Asia' was designed to serve the UN and its Specialised Agencies.

It was obvious that this new mission could not be a sort of trek, like the desert assignment. It was more ambitious in its scope, in its itinerary and in the aspects to be covered. It needed careful planning to fit the various projects, in which the diverse agencies were concerned, into a travel schedule.

A LONG
HOUSE IS
just that—
a long
house in
which a
whole vil-
lage lives
under one
roof. Jibu
broods on
the moun-
tain be-
hind.



IN THE HOUSE OF
THE THAIOS Palyn
Gawee, in a mood
like oblivion inter-
cedes with Jibu

PAGAN RITUAL Sigota kneels before the cane-and-leaf shrine, appeasing the Rice God



MUSIY COPS Sigota and Sen os fill the bamboo bottle



JUNGLE NATIVITY Modern midwifery comes to the still hats. A Bornean nurse with her United Nations' tutor, has delivered a jungle baby

It needed careful timing (for instance, by reversing the original route from Afghanistan to Borneo and travelling East to West instead, we managed to escape the monsoon, and Eric Schwab and the film teams had only two days on which they had not perfect shooting weather). It had to be completed in 100 days and that meant arduous effort and severe strains on physique and temper.

So the choice of travelling companions was important and there I was incredibly lucky to have, as my colleagues, Eric Schwab, commissioned by UN, as still-photographer, and Herbert Steinhouse, the Canadian Broadcasting Corporation commentator, who was to record the radio material. We were fortunate, too, in having Peter Amavasi of the Malayan Film Unit and Wilson Sillitonga of the Indonesian Film Unit on local assignment to us ; they were Good Companions as well as excellent cameramen. And, by keeping to our dead-lines, we were able to make rendezvous with Donald Fraser and Graham Wallace, who were shooting films for UN in India and Afghanistan, and whose material provided coverage which we needed.

There were 'briefing' conferences in Geneva, Paris, New Delhi and Bangkok at which we fitted the many projects of the various agencies to our wider theme—the fight against disease, hunger, ignorance and poverty.

But I was glad, and relieved, when, apart from information and available facts, we were given 'The Freedom of the Three P's'—The Problem, The Programme and The Progress. Putting it more cynically than events justified : if we could not find any Progress in a given situation, we could discuss The Programme and, if that did no. answer, there was always bound to be The Problem.

In terms of the assignment, therefore, there were logical reasons for the apparently incongruous. Separately, the items might appear diverse and unrelated, but they were part of the same sum and they did add up in a rational and, as this book, I hope, will show, an exciting way.

For example, there was a very good reason why we should start off in a pagan longhouse of the Bornean Dyaks, up in the jungle treetops. It was fundamental to The Problem : What are the resistances to change likely to be and (just as important)

what effects will the impact of modern science and technology have on old and, in some cases, primitive societies? And where better to start than in a simple pagan community?

Alongside the achievements of the doctors controlling malaria with DDT insecticides or yaws with penicillin, there was the struggle against malnutrition and for food. And Eric wading in the wet paddy-fields was recording a story which his pictures will repeat to advantage throughout the hungry tropics by telling others how Javanese farmers grow fish in the wet fields and harvest rich protein with their rice. And the peasants he photographed chiselling their canal through volcanic rocks were turning their energies, liberated from disease, to increasing their food by bringing water to their thirsty hills. The dancing-girls, as will be found in Chapter Three, were celebrating that marriage of modern science with traditional religion which rid a whole province of the malarial mosquito.

Eric found his answer to the 'pourquoi' about the teak forest when he stood on a bluff looking down on a jungle torrent, a mill-race of mud as thick as molten chocolate, swirling its way to the Mekong River. Every year the floods of the Mekong, churning through Indo-China, swamp cultivated lands, covering them with silt, drowning and smothering the crops, destroying homes and spreading hunger and disease among the homeless. And the answer lay there in the teak-forest of the mountains. Thoughtless destruction of such forests by lumbermen for the quick profits of teak and by the shifting cultivation of the jungle peasants, who strip and burn the jungle, leaves the naked land to the mercy of the monsoon. The deluge scours off the soil and silts up the river bed and extends the floods. We were there to see how present-day forest management can arrest this and still provide teak and crops for the tribes.

The story of Sigota going to school at eight o'clock in the stealthy darkness of the jungle night ; of the graduates at a teachers' training college doing their tribal dances to barbaric rhythms ; and of Singing Supraptor, the teaching troubadour, are all part of the heartening story of the new urge to fight against ignorance, that concomitant of hunger, disease and poverty.

People making pottery is an example of the revival of rural crafts and industries, which ILO is encouraging and which is helping FAO in its efforts to get more food produced. Yes, *more food*, because the arable land is overcrowded with people and until some are drained off into industries it is impossible to improve agriculture, so that it will provide not only adequate subsistence for the peasants but a surplus for the new craftsmen. And since there is still a seasonal need for extra hands on the land, the crafts and industries must be localised.

The expedition to Mandalay to see a condensed milk factory was still pursuing our theme. The Children's Fund has drawn women and children to the clinics, largely by the inducement of dried milk supplies, but the available supplies from international sources cannot continue indefinitely and the countries will have to try to provide them. In Burma, ILO and U.S. Mutual Security have encouraged the establishment of condensed milk co-operatives, centred on a modern plant at Mandalay, and FAO is helping to build up the dairy herds which were destroyed during the Japanese occupation. So the condensed milk factory is an important item in the story of Mother and Child Health.

When we went all the way to the Land of the Juggernaut, to Cuttack, in the State of Orissa, to see scientists pollinating rice-plants, we were probing something which may well change the entire picture in S.E. Asia. If they succeed, as they probably will, in producing the proper hybrids they may double the production of rice in tropical Asia and remove the shadow of famine.

The tractors tearing up the jungle of the Himalayan *terai* might well exemplify the point and purpose of this book and of the technical assistance which it describes. There, on the borders of Tibet and Nepal, is an object lesson in what co-operation between the UN and government can achieve—a jungle, ruled by the mosquito for a thousand years, now rid of malaria by international medical staff working with Indian colleagues, and being broken into rich fertile fields, with the help of FAO and the International Bank. Rural industries are being established and Unesco is helping to equip a school.

And, *pourquoi*, the women in purdah? That is anticipating the arguments by which I have convinced myself—that upon

the emancipation of women depends the solution of the problems of S.E. Asia.

That raises the *pourquoi* for which I have no satisfactory answer. Why *Men against Jungle?* Over and over again in the succeeding pages, you will find the remarkable part which women are playing. I can only retreat lamely on the excuse of *Homo sapiens* and that 'Man' embraces 'Woman'.

This, I repeat, is not an account of just another journey. To us it was an exciting experience and perhaps the reader will share some of that excitement, which comes from encountering strange peoples and queer events, with the spice of danger, real or imagined (and in the jungle the tension of either is the same). But this book is a great deal more. It is an account of real achievements ; of men and women of all nationalities working together for human betterment ; of millions of lives already touched and transformed ; of a pattern of internationalism in which service, not domination or intervention, is the motive ; and of the United Nations in action.

It is, even when we include the Sind Desert and the barren mountains of Afghanistan, the story of 'Men Against The Jungle'. For the 'jungle' is more than the tangled rain forest ; there is the jungle of mass-diseases, of hunger, ignorance and misery, which smothers the innate resources of the peoples as surely as the riotous vegetation smothers the rich soil and the wealth of natural resources beneath it.

This, I assure you, was a Journey into Hope. We have seen the smile on the face of a jungle mother when her dying baby was saved by penicillin. We have seen the ploughshare upturn the soil of a jungle, held by the tigers, the wild elephants, and the cobras, in fief to the mosquito, for a thousand years. We have seen the jungle in retreat.

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PART ONE

JOURNEY INTO HOPE

*Being the Story of
the Journey*

CHAPTER ONE

Jabu

BORNEO

OUR appointment was with Jabu, the Spirit of the Mountain, in the recesses of the jungle which lies southward towards the Equator from Kuching, the capital of Sarawak. And the appointed place was the longhouse of Riam, *kampong*, or village, of a group of Land Dyaks, erstwhile headhunters and still head-worshippers.

A jungle scout had gone a day's journey ahead of us to warn the headman of our coming and to recruit the bearers who were to meet us on the edge of the jungle and transport our baggage—sound-recorder, magnetic-tapes, cameras, film, flash-bulbs, typewriters, mosquito-nets, medicine-chest and emergency supplies of food and drink. They met us all right but, as they trotted out of the undergrowth, I looked at them in dismay : they seemed too small and too slight to cope with our equipment which the jeep had off-loaded in the clearing. But I underestimated those Dyaks. They were unabashed by the pile or by the bulk of some of the articles. They took charge of the situation immediately, whipped out their *parangs*, those razor-sharp knives, broadtipped like scimitars, and dived into the bamboo thicket. Two strokes felled a bamboo ; a few swift slashes stripped it of its leaves and turned it into a pole. A flicker of knives stripped off the bark and split it into strands to make tough ropes.

I saw Herbert Steinhause wince as they snatched up his sound-recorder, slung it on the pole like a bunch of onions and trotted off. All the way from Ge...va, to Delhi, to Bangkok, to Singapore, to Kuching, to here, Herb had humoured, cosseted and nursed that recorder as though it were a fractious child and now to see it man-handled and jiggled and jolted on a swaying bamboo! Eric, who had been chuckling at Herb's discomfiture, was presently ranting and raving in expressive

but ineffective, French at the Dyaks who were treating his case of flashbulbs with equal disrespect.

There was nothing we could do about it, except be fatalistic, and join the Indian file which was threading its way into the labyrinth of the jungle. And once we had left the clearing behind us and were deep in the dim, green, steaming cloisters of the jungle we forgot our worries about equipment in concern about ourselves. That concern came not from actuality but from having read books and seen films and from the fantasies of fear which the sight of the rifles of our Dyak escort at once aggravated and comforted. Let me say at once that neither in this nor in any of the other jungles did the wild beasts ever threaten us, or, at least, confront us—for they were around us but as chary of us as we were of them.

Before long, any nervousness was replaced by preoccupation with the heat and the humidity. With the sun screened and filtered into a luminous green and the steam rising as a miasma, everything became blurry and one had the sensation of walking on the seabottom or in a giant aquarium. Our breathing was heavy with the hot smell of rotting vegetation. And so we went on in silence. The jungle itself was hushed, so that a slither or scurry of an animal or the flutter of a bird was as startling as a screech. The Dyaks themselves were saving their breath for the effort of portage and we . . . well, we were making up our minds about the jungle.

Presently, there were plenty of signs that we were nearing the pagan village. The pace of our bearers had quickened to a jog trot. Our armed escort had slung their rifles and were lending their shoulders to the baggage poles. The file was snaking through the undergrowth at a speed which was rapidly dissolving our puppy fat. But apart from the homing instinct of the porters, there were plenty of other signs—last year's ricefields matting over again with jungle; the rubber-trees with fresh wounds dripping white latex into the cups set that morning; and the pagan shrines.

Particularly the pagan shrines. At close intervals, we met these frail structures, like cake-stands, with leaf plates bearing the offerings to appease the evil spirits. They marked the spots where the villagers had encountered bad omens—like the spider-catcher bird flying from left to right across

the path, or a snake of the wrong colour, or an unpropitious signal from a barking deer. We had been forewarned of these superstitious hazards and how we might be stranded by them in the jungle—if, for instance, there had been an unfavourable omen and the bearers had decided to down baggage, or turn back, until the evil influence had been exorcised or the animist gods of the jungle appeased by offerings or sacrifice.

Fortunately the gods favoured us and presently we emerged from the green confines of the tangled jungle on to a ledge above a gorge through which swirled rapids with the force of a mill-race. Beyond this, and still hidden, lay the *kampong*, or village, of Riam. There was no path to the water's edge but a tall tree had been cut and toppled over, so that it leaned against the side of the bluff, from the ledge to the rocks below. It had been notched, like a hen-ladder, to provide footholds and down this, unhelped by any balustrade, went our sure-footed bearers, with their cumbrous, pendulous loads, but with as much nonchalance as though it were a marble staircase. They piled the baggage on the rocks and encouraged us to make the descent with advice and banter. My own performance provided them with much amusement and (so our interpreter told me) a lot of ribald derision of my monkey-ancestors.

Next we had to confront the ordeal by water. The boats were tree-trunks, hollowed out and shaped with adzes and fire. We came to have a healthy respect for those remarkable craft and an admiration for the Dyak boatmen who handled them. They stand in the stern with a long punt-pole and edge the boats into the rapids where they swing like the needle of a speedometer and rock like a cradle, and then by feats and freaks of muscle-power and agility of arms and legs the oarsmen edge them past the rocks and steady them as they tilt. But I confess, we watched the performance of the boats as they came across for us with misgivings which we pretended were for our equipment but, more honestly, in unpleasurable anticipation of what might happen to ourselves. Nevertheless, there was an exhilaration in shooting those rapids and being swept and buffeted by the current to the other side. We emerged, soaked by the water we had shipped, and were helped ashore by a reception committee of the Headman and the Elders, who had been warned by the look-outs and had hurried down to

the river's edge. When the ceremonial exchanges had been completed, our interpreter asked the indulgence of our hosts, and, following the example of our bearers, we stripped and plunged back into the river.

Then we climbed the bluff by another notched tree and crossed another gully by a Dyak bridge. This was a single tree-trunk supported by trestles of bamboo in the form of a cross. The sensation, for the inexperienced like us, was rather of tightrope walking but we got used to it. This took us to a clearing among the coconut palms and the bamboo-brakes and there we saw our first longhouse.

A longhouse is just that—a long house which holds an entire village, in this instance, of 250 people; some hold more than a thousand. It is built at tree-top level, on a platform of split bamboos—a platform as big as a football field supported on massive stilts. Along its length runs a verandah, so that the effect you get is of the deck of a ship with cabins down one side. For the longhouse is divided into 'doors', which mean family sections separated by partitions or wicker-screens. There, however, the concession to privacy ends since there are gaps in the partitions and one can walk the whole length of the longhouse, so that the village is, in fact, one huge family under one roof.

When we clambered up the hen-ladder and arrived breathless at the top, we were seized by friendly hands and hauled 'aboard'. Two maidens, Dengi and Rami, in lively sarongs and with tiaras of jungle-flowers in their hair, took the three of us by the hand, like the setting of a country dance and led us along the platform, followed by smiling men and women and gape-eyed buff-naked children, to the ceremonial marquee outside the Headman's 'door'. There, under a canopy of white muslin, the Elders of the village had assembled for our induction ceremony. A table and crude chairs had been set for us but the Headman, a youngish Dyak in khaki shirt and trousers, the Palan Gawai, the 'Head of the Feast' in a drab, brown Bornean turban, and brown tunic and sarong, and his fellow-elders in much more colourful array, squatted on mats. The rest of the people of the longhouse crowded round to watch.

These were the Land Dyaks, headhunters of barely two generations ago and still, in this longhouse, head-worshippers.

They are to be distinguished from the Ibans or Sea Dyaks, who first acquired the reputation of 'The Wild Men of Borneo' because of the havoc and terror they once wreaked upon the East Indiamen which they used to intercept and board at sea. But the 'Land' and 'Sea' can be misleading because they suggest that the one is a Dyak group of the interior and the other a group of coastal mariners, whereas the Sea Dyaks are found just as far inland as the Land Dyaks and their exploits at sea were the more remarkable because they were river boatmen who, in their inland craft, somehow managed to manoeuvre the dangerous coastal currents and weather the open ocean. The Sea Dyaks are supposed to be much more lively, enterprising and intelligent than the Land Dyaks. If so, it can only be a matter of degree because, by the time we left, the Land Dyaks had made a most favourable impression upon us.

The Riam Dyaks are pagans, still uninfluenced by the Mohammedanism which Arab traders introduced 500 years ago or the Christianity of the past century, which had been accepted by many longhouses. It is never a question of individuals being converted; a whole *kampong* accepts or rejects Christianity—and we heard of longhouses which, on conversion, distributed their collection of human heads among neighbouring *kampongs* which remained pagan.

The pagans of Riam live in fearful intimacy with Jabu, the spirit of the jungle-clad mountain which dominates the landscape and their lives. Jabu is a jealous god, cantankerous and spiteful who, like a moody, ill-natured spouse, has to be humoured from fear, not affection. And it was made quite clear to us that our welcome, though spontaneous, was still conditional on the approval of Jabu, who was bound to be suspicious not only of us as strangers but of the queer contraptions we had brought with us—cameras, flashbulbs, radio-recorders and typewriters. These the Palan Gawai and the Elders inspected with headshakings and misgivings, looking over their shoulders and shouting interrogatively in the direction of the mountain. It was very much like a customs inspection; we had already negotiated our equipment past ten customs barriers (and had another 27 to go), but our United Nations *laissez-passer* could not help us here and our 'clearance' went on for hours.

The Palan Gawai officiated. He was a lively, wizened little man, with twinkling black eyes and with betel-juice dripping incessantly from his toothless chops, like gouts of blood. It was claimed that he was 93 and when I queried this (because he was so active) the Headman, after argument with the Elders, confirmed it apparently by reference to some battle in the days of the first White Rajah, James Brooke—like dating someone by saying his father was killed in the siege of Lucknow.

With two of his cronies, the Palan Gawai squatted on a mat on which was laid a platter with a food-offering for the god. It was mainly rice but mixed with areca-nuts (source of the betel-juice which incarnadines the spittle and blackens the teeth), herbs, tobacco, and sundry indistinguishables. They kept adding and subtracting from this feast, as they chanted and ranted. They would hop up every now and then and throw rice towards the brooding shadows of the mountain. Then they turned their attention to us; they rubbed rice into our hair like a shampoo and smeared our heads and bared chests with saffron-root; they scattered rice over our equipment.

Quite suddenly, as though at a signal, all three leapt to their feet. They hurriedly collected handfuls of rice and lime-leaves and the Palan Gawai grabbed a glass and a bottle of beer (yes, beer) while he jabbered at us to follow him. Almost at a trot, they hurried along the length of the longhouse and down the notched tree-trunk followed by us, by the villagers *en masse*, and by bearers with our equipment.

Our interpreter was breathlessly trying to explain to us as we hurried along what it was all about. This, apparently, was a crisis situation and we were on our way to the Pangga, or House of Human Heads. The Pangga was a large circular hut, in a clearing beyond the longhouse, thatched with banana-leaves and guarded by a totem-pole as high as a flagstaff with a wisp of banana-leaf on top. Inside, a raised platform ran round the circumference, like a tier at a circus. On this, at night, the adolescent boys of the longhouse slept. At one point, suspended above this dais was a swinging altar on which were the human heads.

There were four—three of them relics of ancient head-hunting but the fourth was much more recent; it was a Japanese head cut off by the guerilla Dyaks in the Second World War

when, with the approval of the white authorities who for a century had vigorously suppressed headhunting, the tribesmen reverted to age-old custom. The Dyaks, I gathered, had found this inconsistency of white man's logic and ethics rather confusing. Why was a practice wicked when applied to their enemies but meritorious when exercised against the white man's enemies?

As the youngest and fleetest, the Japanese was chosen by the Palan Gawai to be our messenger. He took the skull and harangued it and then, filling a glass with beer, made the motions of making the skull drink it. Then a flap in the roof was pulled open and, in mime, the skull was asked to go off to the Mountain and to intercede with the Spirit. The old man made a gesture of throwing the skull, like a racing pigeon, out of the hut, followed by handfuls of rice as rations for the journey. Then he squatted down and, in a trance-like oblivion to everything else which was going on, played a *subei* or four-holed reed pipe. Another of the Elders stripped to the waist and, with three bronze-torsoed youths, began to beat the *gedangs* in another part of the hut. These *gedangs* are long sections of hollow palm-trunks with hide stretched over one end. Others beat *kromongs* or gongs like inverted pans.

This went on a long time. Steinhause discreetly switched on his recording machine and introduced the microphone unobtrusively, to pick up the reedy wailings of the Palan Gawai. Presently, for no reason which was apparent to us, the old man got up and announced that the messenger had returned with good news. The Spirit of the Mountain approved of us and assured the village that we were good spirits who would bring fine rice crops and help the sick. As I whispered to Herb, Jabu must have been impressed by our credentials from the Food and Agriculture Organisation and the World Health Organisation.

After that we had the freedom of the village, even to exploding flashbulbs in the House of Heads and making recordings of the ritual music, songs and dancing. And that was when we made our big mistake. Steinhause played back the recording which he had sneaked while the Palan Gawai was playing his trance-music. The old man's reactions were at first those of alarm— though Jabu were mocking and aping him

—then of curiosity and then of unrestrained delight, hopping and skipping round the recorder. Nevertheless, it was a mistake because from then on they wanted everything played back to them. They even wanted Schwab to 'play-back' his pictures!

We soon found that being Good Spirits and having our licence as such from Jabu was no sinecure. We were no longer observers but participants in the ritual and the ceremonies. And these went on far into the night, a weary business after our day of foot-slogging through the jungle.

Darkness had engulfed the longhouse. The Feast of the Spirit ('pronounced 'oompro') was spread out on the bamboo slats under the verandah in the glare of acetylene flares. The families brought food and laid it in front of Palan Gawei. Mothers brought bowls filled with their family treasures (including, now, our discarded flashbulbs) and a live chicken was produced and tied to a pillar.

The Palan Gawei, then the Elders, then the wives and then the maidens came to us in succession and tied little bells round our arms with raffia and bark-string, until we were covered from the wrist to the armpit. We had to reciprocate and tie Good Health bangles on them.

There was a great deal of chanting by the men and then the old women gathered round in a circle and keened 'The Rice Song', the gist of which was that they had heard that there was much good rice in Java and would Jabu have a talk with his friend the Spirit of the South Wind so that some of that rice could be flown to Borneo? (We might have told them that while there was better rice in Java because the peasants were better cultivators there was none to spare because there were so many people in the island that they were now having to import rice from Thailand.)

This was followed by a chant for the sick, and for this the ailing were helped into the white glare of the acetylene lamps. One, a young boy, with a terrific gash in his shoulder. He had been hewing bamboo in the jungle and his parang had slipped and split open his shoulder. It looked worse than it proved to be when we examined it because, left unbandaged, it was smeared with a compound of chili-pepper, betel-juice spittle and what looked like coffee-grounds. The boy was quite chirpy

and certainly was not running a temperature or feeling sorry for himself, but Herb and Eric and I went into a huddle to decide if there was anything we could do. We had sulpha drugs, dressings and medicaments but none of us was a doctor. The suggestion that we should clean up the wound and treat it (by guesswork) I promptly vetoed because I had no idea whether the concoction might not have some medical virtues, and if we substituted 'White Man's Magic' for it and it did not work, or if he died, we would be blamed and would prejudice the work of the doctors and nurses whom, we hoped, would follow us. We might, however, have tried to persuade the wise woman of the tribe who had prepared the chili-pepper mixture to add some of our modern drugs to it. We might have compromised between the sulphanomides and primitive superstition. Instead, I decided to have a word with the Headman and see whether he could not persuade the boy to come back with us to Kuching Hospital for treatment.

The Elders, despite their decrepit years, staged their own dances and as the music became more and more frantic, age dropped away from them and with their feathers bobbing and sarongs swirling they writhed and twisted until they collapsed exhausted. Even more violent was the sword-dancing of the younger men. It was a mime of headhunting, but carried through with razor-sharp parangs which swirled round the dancers heads and with such convincing effect that we shuddered every time a head ducked.

All this was working up to a climax and when it came I did not like it. We had been told by Those Who Know that we must not shirk the ritual because it would give hurt and offence and might, in the blood-heat of ceremonial frenzy, cause dangerous resentments. But this was the moment when I and my stomach jibbed. With a flicker of a *parang*, the head of the chicken which had been tethered to the pole all this time was lopped off. The Palan Gawai squirted the blood into a silver bowl and mixed with it the juice from a coconut. He came to me and told me I must take this bowl and a circlet of bells and spatter the hot blood over the people. I demurred. They insisted. I submitted.

Women brought their infants wide-eyed and sleepless from all the excitement and got me to put blood on their foreheads.

They brought little girls, their dusky faces pathetically powdered with sandalwood dust and their lips reddened. The maidens of the longhouse came crowding round, grabbed my right hand, dipped it in the bowl and smeared the blood on their cheeks.

All this was happening to the throbbing of the *kromong* gongs. While I was being swirled around in a wild dance, I would dip the circlet of bells in the bowl and flick gouts of blood over the naked torsos and then be spun round until I was dizzy. In one of the gavorts I passed Herb struggling with his recorder, trying to catch this orgiastic din and I panted, "Goodness knows what Brock Chisholm is going to say when he hears about this." Dr. Chisholm was then the Director-General of the World Health Organisation and it was he who had suggested that we ought to get down to elementals. And, sure enough, when we came to play back this ceremony at Geneva months later, out of the hubbub came a breathless and distraught voice . . . 'Goodness knows what Brock . . .'

One significant incident was the eruption of the young men. Earlier in the evening, I had noticed a 'school' of about a dozen sitting at the far end of the verandah playing cards. They were the young boatmen who took the jungle rubber by canoe to Kuching and they had acquired the 'city slicker' attitude, contemptuously ignoring the rites and ceremonies and going on with their card-game. But when the *kromong* gongs were whipping up a frenzy and the chanting was getting louder and louder, there was a scuffle and these youths came charging hysterically through the crowd, flung themselves at my feet and then plunged their hands into the bowl and smeared their faces. Their bravado had been no proof against that final 'blood-test'. Primal superstition had won!

Utterly exhausted by our trek, our ordeal and our efforts we crept to bed, while the ceremonials settled down into an all-night party with more dancing and more singing, enlivened by libations of rice-beer, or *arak*. Our bed was a rice-straw mat, laid on the bamboo slats of the floor and the only thing which separated us from the communal life of the longhouse was the cheese-cloth of our mosquito-tents. It was rather like sleeping in the middle of a fairground, with the people passing backwards and forwards and the sound of the music and



LIKE GNOMES IN SOME weird fairy tale
JAVELINA points to making a mud



A SANDALATE in one of their own fields teaches them letter recognition

A LIVING PYRAMID - THE WORKS OF



THE RICE
GIRL reaping the han-
vest work
barefoot
That means
cuts and
sore and



YAWNS
enters through
the wounds
The Indo-
nesian doctor
diagnoses the
disease which
one shot of
penicillin can
cure



dancing. But that clamour was presently forgotten in the consciousness of the stirrings below—the slitherings and scratchings and scufflings of miscellaneous reptiles and prowlers in the jungle underneath—and in the realisation that one was separated from them by a mat and some gaping slats. Then even these noises were smothered by exhaustion.

Life in the longhouse begins with a chorus of cockcrows under the bed, because they roost and the pigs root in that space between the floor and the ground. These village animals are the scavengers who deal with the refuse and the sewage, which is disposed of quite simply, if crudely, by having corners of the longhouse where the slats are a little wider apart. This is what WHO calls ‘environmental sanitation’ and, by text-book standards, leaves a lot to be desired. But one has to forget the refinements of modern plumbing in the jungle and certainly the horizontal longhouse seemed much more healthy and hygienic than some vertical longhouses I have known—the tenements of a city slum. The longhouse, even in the sanitary corners, was clean. This itself was a feat and a tribute to the habits of the Dyaks of Riam, for all the water had to be carried from the river, the rapids of which we had crossed.

And that is one—just one—of the tasks of Sigota, the jungle schoolgirl. Sigota told us she was twelve and the oldest of four children, three girls and a baby boy. At cockcrow, she roused herself and her girl-friend, Sengos. She also woke us, because we had arranged to go with her to the river. They slung on their backs a dozen bamboo bottles. These are sections of the cane, lopped below the knot, which forms the bottom, with the tube open at the top.

The first thing Sigota and Sengos did when they reached the river was to have a morning bath. This they contrived simply by walking straight into the rapids still wearing their sarongs. Laundering is a simple matter in equatorial Borneo. The dresses were washed at the same time as they bathed and were dry before they got back home. Then they cleaned their teeth by rubbing them with a sliver of coconut shell with its useful bristles.

Her morning ablutions over, Sigota filled her bamboo bottles

with clear, running water. One bottle was leaking but that presented no problem. She called to a boatman who hopped out of his canoe, ducked into the jungle and with two deft strokes of his curved parang felled a bamboo. A few more strokes and he cut out a section. He trimmed it and handed it to Sigota. It did not take a minute.

Sigota filled her new bottle and strapped it with others on a rack which she slung on her back and with that straight-backed, perfect posture which teachers of gymnastics spend laborious hours trying to produce in Western girls, she climbed back to the longhouse.

Her mother, by this time, was squatting on the floor, fanning a charcoal brazier on which the rice was cooking. That, and a mess of vegetables, spiced with chili-pepper, and a banana from a bunch just cut in the jungle, was Sigota's breakfast. She washed it down with a draught of cool, clean-tasting juice from a young coconut, freshly broached.

The longhouse is divided into working-parties; the head of Sigota's party summoned her and with the others we filed off along the jungle trail, led by an old crone chewing a ball of lime, betel-nut, and red tobacco, which had already blackened her teeth and turned her mouth to an oozing scarlet gash. She was muttering all the way—on gossiping terms with the spirits, who, because she was so old, could not harm her. Her job was to watch the omens. Perhaps Sigota and her lively girl-friend, who were walking along so demurely (one must not be sprightly with sprites) were hoping that they would hear the bukang-bird, because if they did they would all have to turn back and abandon the rice-planting for the day. But no ill-omen crossed our path on the long trek through the steaming jungle to the ricefield.

This was a patch of hill-jungle, a few acres in extent, which the villagers had laboriously cleared by cutting down the bigger trees and setting fire to the undergrowth and the bamboo brake. The ash and charcoal lay heavy on the untilled ground.

In the middle of the patch was an erection of bamboo canes supporting a thatched roof and a platform on which was laid a variety of trinkets, a banana leaf of food and a bottle of rice-beer. The spirit, whose shrine it was, liked a square meal and strong drink, washed down with water from bamboo bottles.

It was one of the duties of Sigota and Sengos to replenish these bottles, throughout the heat of the day, with cool water.

The aged Mistress of Omens however, ignored this permanent shrine, went to a corner of the patch, on the edge of the jungle, and rigged up another shrine of thin canes about three feet high and thatched it with green leaves. She squatted on her haunches, laid a leaf like a green salver and on it placed some food and a sprinkle of rice from the baskets of each of the sowers, adding some of her own chewed betel-nut. Then for about half an hour she alternately scolded and cajoled the Rice Spirit until finally she got some sort of assurance and signalled the planting to go on. This daily ritual is very important because, if the Spirit sends the wrong omens, if he lets the wrong kind of snake (not necessarily a deadly one) stray on to the ricefield, the villagers will abandon the patch and all the labours it has meant.

The planting was very simple. The men of the party went around stabbing the ground with pointed staves and the women and girls followed, dropping a pinch of rice seed unerringly into each hole. The holes were left uncovered, an invitation to the birds—another good reason for appeasing the Rice Spirit, within whose jurisdiction bird-thieves come.

When the sun reached the perpendicular and seemed to be focusing on that jungle clearing with the intensity of a magnifying-glass, the group-leader called a halt and we retreated into the shadows of the undergrowth and along the path to the longhouse.

On the way we met Bait, a twelve-year-old schoolboy friend of Sigota. He was finding his way back alone from this morning's tapping of the jungle rubber trees, since dawn he had been out carving spiral cuts in the barks of the trees, making runlets down which the oozing white sap drained into a cup. He was now carrying back his collection, which he would prepare into mangled sheets and hang out to dry until the Chinese merchants would come and bid for it. The rubber boom, due to the stockpiling for rearmament, had reached into the heart of the Bornean jungle. The chromium-plated wrist-watch on Bait's arm and the ball-pointed pen clipped to his shirt were his share of the boom. Some longhouses with a lot of rubber trees had become money-rich. In the past, Dyak wealth has

taken the form of jars—the *lares et penates* of the respective families; these jars are rare Chinese pottery, relics of the traffic, across to the mainland, in hornbill ivory, turtles' eggs and bird-nests. Now they have currency which they convert into outboard motors for their canoes, radio-sets and even generators to light the longhouses with electricity. It is an extraordinary sight to see a chromium plated bicycle hanging from the rafters of a longhouse in the heart of a jungle where there are no paths on which to ride it—a fetish as strange as the suburban television aerial without a receiver.

After her midday meal, which was like her breakfast but with the addition of a slice from the pineapple which her mother had collected *gratis* from the jungle, Sigota spent the afternoon looking after her brother, strolling along the platform with the boy riding astride her thigh-bone—no pickaback but pickaside. Then she relieved her sister who had been sitting waving a long cane suspended over the rice spread on the mats to dry. This was to keep off marauding poultry and while Sigota swung it, her year-old brother sat naked beside her, waving a stick three times his own size, rapturously shooing off the persistent hens.

When her mother awoke from her *siesta*, Sigota turned to more serious work, threshing last harvest's rice, beating it until the chaff, winnowed by the wind, dropped through the slats to feed the poultry below. Then she had to sit and laboriously handpick the bad grain from the good, and when night came, with equatorial suddenness, she was still milling it between two hunks of wood.

At seven o'clock, after twelve hours' work in the jungle and the longhouse, Sigota went to school. The crescent moon, cradled on its back, could just make the darkness visible and the Dyak children took hurricane lamps to light their procession from the tree-height of the longhouse, down the hen-ladder and across the clearing to the edge of the undergrowth, where stood the thatched hut which served as a schoolroom.

The teacher was a Bornean Malay, who proudly showed me his certificate, accrediting him as a temporary teacher. It stated that he, Ibrahim bin Mantali, aged 45, had passed standard four in Malay and standard three in English. In his white pyjamas, he presided over the class in which some of the pupils

were over 20 years of age. His blackboard was lit by a hurricane lamp which periodically became masked like a dark lantern by the swarms of insects which covered it. Beside each pupil, on his desk, was a little oil lamp with a naked wick and the candle-power efficiency of a widow's cruse. By this they did their sums and read their books.

This was not compulsory education. The *kampong* had hired the teacher by their own subscriptions and the children went voluntarily. They were anxious to learn even if it meant going to school in the jungle-darkness which was alive with strange sounds—including the echoes of the A.B.C.!

Here, in the longhouse of Riam, we saw something of the nature of the problem of resistance to change and, just as important, we had a forewarning of the impact of change. In the first instance, modern science and technology can prevail if the 'magic' is more powerful than that of Jabu, and his like, and if it can protect the people from the spiteful spirits. In the second instance, it will be tragic if 'change' means destroying the social values which are real in the longhouse community.

The people are teachable and intelligent enough to realise, for example, the benefits of better rice seed and of improved methods. They will respond to medical services when they experience the results. But their society and economy are vulnerable when they turn from subsistence to trade and the tribal group begins to break up with the drift of the young men and women away from the self-sufficient unit which is the longhouse. In such a community exists the microcosm of the Welfare State which Britain is trying expensively to constitute. No one in a longhouse goes hungry unless the whole village is hungry. Widows and orphans are absorbed into the larger family. If the breadwinner is sick, his work is done for him. They 'collectivise' only for the bigger jobs like jungle-clearance or tackling a particularly big tree for making a canoe. For the rest they work as families or groups of families, some of which may have acquired property in the form of jungle-rubber trees, while others have followed a craft like boat-making. In the sum, however, they are a community which cares about the individual and its individuals will be pretty helpless if it breaks up. There is no reason why modern amenities should not build upon what is good in the old.

We had sampled primitive superstition. When we were about to leave, we went in search of the boy with the gashed shoulder to take him back with us to Kuching Hospital. Neither he nor his mother could be found. They had vanished into hiding in the jungle. I was annoyed and the headman, who had promised that the boy would come, was apologetic. Then I got the explanation. The boy would have had no hesitation in coming to Kuching but his mother was afraid of hospitals and of his being 'Unremembered'. They have no 'Hereafter' or a belief in personal survival, but they want to be 'Remembered', and to be remembered one must have one's family around the death-bed. To die alone is to be forgotten. And to avoid that risk, the mother had smuggled him away in case we might persuade him.

This gives some slight hint of the difficulties confronting a medical service in a region such as Borneo.

This island, the third biggest in the world, is bisected by the Equator, and large areas of it, if not unknown, are at least unfamiliar. The greater part of it was Dutch Borneo and is now part of Indonesia, but the northern strip, which consists of Sarawak, Brunei and North Borneo, is British administered.

For the whole of Sarawak, an area as big as England and Wales, there were only nine doctors when I was there. Before medical science can help people, or even come to grips with superstition, it must reach them. In the whole of Sarawak there are only 460 miles of roads and for 400 of these 'road' is merely a courtesy title. The only way through the swamp and jungle and into the remote uplands is by water. What is needed for rapid movement is either flying boats or helicopters adapted to water, but since those are not available, the services have to rely on launches or native boats fitted with outboard motors.

So the emissaries of an advancing civilisation must follow the routes of barbarism and penetrate to the remote districts by native boats adapted for the purpose. These boats are, in fact, hollowed tree-trunks but that does not mean that they are crude. They are made with great skill. The tree is carefully selected and patiently seasoned. It is then opened up lengthways and scooped out with axes and adzes. Stretchers of different

dimensions, according to the shape of the boat, are inserted so that the 'lips' of the trunk are forced apart. When its shape has been fixed in this way, the wood is externally hardened by burning and the inside of the boat is filled with water and the whole thing heated to thermoset the shape.

With £78,000 provided by the British Colonial Development and Welfare Fund, the Sarawak Medical Service then under Dr. James Liston started eighteen dispensaries, two out-station and sixteen mobile, 'mobile' meaning 'afloat'. And these floating dispensaries are converted native *perahu*, powered by outboard motors and covered-in amidships to provide a medicine store and somewhere to sleep. They carry a crew of three, a hospital attendant, an attendant and a boatman, all Borneans. They operate continuously, keeping a regular schedule through the mangrove swamps and along the sea-coasts and up the rivers and past the rapids into the jungle and the uplands. The intervals at which they call at their consulting-points are fixed; it may be days, weeks or months but it is 'same place, same time' so that their visits and their moorings become familiar. Tribesmen will travel for days through the jungle to keep the appointment and the chug-chug of the engine is the tom-tom which summons people from afar.

It was this keeping *tryst* which gave us one of our eeriest experiences. We had gone out with one of the dispensaries on its rounds of the Malay fishing villages of the coast and we were caught by equatorial darkness. It was neither the time nor the place for pleasure cruising. It was pitch black and a sinister hour to go nosing through a mangrove swamp. Every dangling vine became a possible python; every floating log a fancied crocodile; every mangrove root, arching high out of the water, looked like a gargantuan spider or a petrified octopus. Adding to the uncanny effect were huge trees covered with glow-worms like luminous spangles on a Christmas tree, and behind us we left a trail of light in the sulky, sullen waters—the phosphorescence churned up by our propeller. On all sides there was the glint of watchful eyes and the sounds of the wild life disturbed by the noise of the engine. A slither and a splash. A scurry through the branches. The flapping of unseen

wings. A cry. A screech. . . . It was an uncomfortable experience, but the dispensary had to push on because it was due overnight at its next moorings to catch the fishermen before they left next morning to search their fish-traps in the river delta.

On this run, we were carrying simple treatments such as cough mixtures, cod-liver oil, stomach medicines, salves and ointments and arsenical injections for yaws. The hospital assistant, Dawi bin Abdul Rahman, diagnosed and treated more than 300 patients in a week. He had no medical degree but he was an excellent medical auxiliary. Whenever he found a condition which required doctor's attention or hospital treatment, he took the patient aboard and the tight-quarters became even tighter when the *perahu* was converted also into an ambulance.

The life on these floating dispensaries is a trying and a dangerous one. The boats are cramped because drugs and equipment take priority over comfort and the team have to eat, sleep and sit cramped in what remains. The heat, the humidity, the sun and the steambath of the jungle and swamp is my idea of hell. Add to that the sickly stenches of the tropical fishing villages, redolent with dried and rotting fish and the putrefying slime of the river-banks, and you have the life of those on the floating dispensaries. It is dangerous, too, because of the dangerous currents which have to be manoeuvred around the coasts, the rapids of the upper rivers and the treacherous channels of the mangrove swamps, where it is very easy to take the wrong turning or impale the boat on some sunken tree or fall foul of a crocodile.

Nevertheless, these tough Bornean medical attendants have shown what can be done. The dispensaries have been an unquestioned success. Hundreds of thousands are treated in a year and the range of usefulness is being extended. These river boats can be adapted to the kind of projects which the World Health Organisation and Unicef, the United Nations International Children's Emergency Fund, are assisting in this part of the world. The river-boat method is one way of spreading the B.C.G. campaign (the inoculation against tuberculosis) of getting Mother and Child Health Services into the interior and tackling yaws in Borneo as thoroughly as they are doing in Java.

The river dispensaries are also liberating the lepers. As you go south into the jungle from Kuching you pass The Rajah Sir Charles Brooke Memorial Leper Settlement. If you miss the signboard you miss the settlement, because there is nothing in the wooded landscape, along a pleasant valley, to suggest a leper colony. There is, for instance, no fencing and nothing institutional apart from a small hospital, a small administrative block and a small gaol which are all discreetly hidden in the trees. Then spread out along the valley are three villages where the 450 lepers live. From its beginnings in 1929, when leprosy was still incurable and its diagnosis was a life-sentence, the settlement was intended to help lepers to live a life as nearly normal as possible while preventing them from being a menace to others. They follow their own trades, live their own lives, run clubs and marry. They have children but the baby will be removed from the mother at birth, before she can infect it. There is a school and the teacher is a leper.

Today, however, we have modern drugs which can cure leprosy. They cannot repair crippled limbs or the ravages of the disease, but they remove the infection and heal the sores. It means that lepers can now be discharged with a clean bill of health.

After the end of the war, when Sarawak was freed from the Japanese who abandoned the lepers to their fate, the Medical Department of Sarawak under Dr. Liston transformed their lives. With the help of one of the sulpha drugs, sulphatrone, they helped them first of all to have a full and active life within the settlement and then with an improved drug, basic sulphone, administered by injection, they achieved actual cures at a cost for the drug of only 8/- per patient per year. Now they are curing more cases than they are discharging. The reason is perfectly sound; they can treat and cure new cases; they can treat and cure old cases. But cure is not enough; the difficulty is to convince others that a leper can be cured. This byword in scourges since ancient times still rings as sombrely as the leper's bell and his cry 'Unclean! Unclean!', and it still makes people cower in dread from the victim. These Bornean lepers come from many tribes—the Melanos, the Ibans, the Kelabits, the Kayans—and from remote parts. They had been driven out of the group as soon as the mark of

leprosy appeared—condemned to death-in-life. And never before has there been a remission of that sentence. It is not surprising therefore that the cured leper who tries to return to his village is as welcome as a ghost, returned from the dead. His fellows will have nothing to do with him.

Then there are the lepers of long-standing. They have been out of touch with the rest of mankind for so long, or they are so conscious of their disfigurement, that they do not want to leave the settlement. Another difficulty—and this is where the floating dispensaries can help—is the need for continued treatment. As a safeguard but a necessary one the discharged cases have to be supervised for three years and have to continue their treatment. Contacts have therefore to be maintained with them, if and when they manage to return to their families, and many of them live journeys of months away from a hospital or a doctor. But basic sulphone can be provided as tablets to be taken by mouth—one a week—and the travelling dispensaries will penetrate as deeply as possible into the hinterland to keep tryst with them for their periodic examinations.

In the medical text-books and the pharmacopœia of new drugs, the doctors and nurses have the answers to such problems as leprosy, malaria, child-bed fevers, yaws, syphilis and other diseases which beset the Borneans. With the help of the World Health Organisation and the Children's Fund campaigns have been started. International personnel have reinforced, though still inadequately, the slender ranks of the European trained doctors, but it is sensibly recognised by all authorities that the needs cannot be met by medical expeditionary forces. The recruitment must be from the people themselves. In Sarawak, local students are coming on and some have been sent abroad to be trained as doctors and nurse-tutors, and the system of auxiliary personnel, the hospital attendants and dispensary staffs, has shown that it is possible to take Borneans with a reasonable general education, and, without pretending to turn them into qualified practitioners, make them competent men (and women) against disease.

This has been well demonstrated in the case of the maternity nurses. The World Health Organisation was asked to help. It sent Miss Olive Warren, of Plymouth, and Miss Hulda

Wenger, from Switzerland, to train local girls. This was something quite new and, indeed, revolutionary because midwifery has been surrounded by religious difficulties and superstition. Childbearing practices were extremely primitive and the consequent mortality of mothers and infants very high.

First they had to recruit enlightened and educated girls and train them as ward nurses for the hospitals. The colonial authorities gave every possible help and the Children's Fund sent in modern equipment for the maternity and children's wards. Then they had to start pre-natal clinics and try to induce the women to attend. This was not so difficult with the Chinese population but the Bornean Malays are Mohammedans and the Dyaks and others in the jungles and uplands were inaccessible.

The Mohammedan women were gradually induced to come to the clinics and many of them, with childbirth complications, could be persuaded to go into hospital, but as often as not, as soon as labour started the husband—or more often the grandmother—would arrive and snatch the woman back to the hut to have her baby. The only practical answer was a domiciliary service—arranging for trained midwives to go to the mothers' own homes. Yet there was resistance even to this because the Mohammedan Malays are supposed to be nursed only by their own 'wise-women', who are paid their traditional fee—a chicken, two sarongs and some needles. These women are illiterate, dirty and often brutal. Their 'surgery' includes sawing the birth cord with a spike of bamboo sharpened for the occasion; then the *bedan* or midwife, produces her betel-nut tin and knife, chops up the nut, wraps it in leaves, adds lime and perhaps red tobacco and chews it into a red pulp and this is smeared on to the cord. These women are also disposed to 'assist' a difficult labour by what amounts to physical assault and battery on the mother.

Gradually, this is changing. I went on a midwifery visit with one of Olive Warren's trained nurses. This new-style *bedan* was in immaculate white and set off from the hospital on her bicycle with a well-equipped maternity bag. She pedalled her way to the stilt-house. The hut was spotless, a tribute to the thorough job of ante-natal instruction the mother had received. The baby was born on the floor, a wicker-mat covering the slats and on it fresh-washed gunny bags with Chinese

paper for the sheet. Faces peered through the basket work walls. When the baby had lustily introduced himself, he was put to bed on seven vividly coloured sarongs on the floor. There is a ritex in this; each day one sarong is removed until on the eighth the infant is lying, like a little spartan, on the cane mat beside the mother. Its daytime cradle is a looped sarong suspended from the ceiling. Hammocked in this the infant is safe from marauding pests.

These new *bedans* are courageous young women, who, with flash-lamps and hurricane lamps go out into the night to bring babies into the world to the sound of bullfrogs in the swamp, the clucking of lizards and the screech of night-prowlers. They face not only the hazards of the wild but the suspicion and mockery of their own kind. All that the government or WHO or UNICEF can do is to start them off. The rest is with them—the breaking down of superstition, the emancipation of the mothers from primitive methods which amount to a death-cult and the persuasion, by their own example, of other girls to take up training. These are the women of two worlds—the world of modern science and their own world of superstition.

These two worlds must always meet half-way. The Western expert is always so limited, no matter how great his qualifications, by his own cultural background. He can never really start from the other persons assumptions and so, whether you are trying to introduce medical practices or improved agriculture, it depends basically on the kind of education on which you are trying to build. Until the intelligent but simple jungle people are convinced that sickness and death are not merely due to the bad temper of Jabu, and that good rice depends on good seeds and better methods of cultivation and not on the whims of the Rice God, any literacy you superimpose will be as shallow as a coat of whitewash.

That is why Batu Lintang belongs to this book and to our inquiry because it exemplified what would seem to be the right sort of approach. Batu Lintang was a Japanese concentration camp of vile repute, not far from Kuching, which was taken over and turned into a teachers' training college. The conversion itself was largely the work of the students themselves. They reconstructed the huts and made them

spick and span. They made their own beds—in the carpenter's and not the housewife's sense—and laid the drains by joining up empty tar-drums. They laid out 48 acres of garden, which is as much part of their education as the classroom, because it is there that they are taught about the soil and the crops and what vegetables are nutritious and why. They built their own sick-bay and ran it. They learn first-aid and how—and what it means—to take temperatures. Experts from the hospital and from the agricultural college come and talk to them. They have visual aids and film-shows to help them to understand the nature and control of disease and other essentials. They have, to that extent, the amenities of a fairly advanced Western educational system to teach them how to answer back to Jabu. But when they do, it will be in their own language and their own idiom, for that is what Batu Lintang insists they shall do.

And that was what made passing-out day, which I attended, rather disconcerting. The speech of welcome was made by a student whose ears were pierced to hold the teeth of the Cloudy Tiger, with the lobes dragged down to his shoulder by massive ear-rings. His skull was shaven except for a top-knot, like a horse's tail. He was naked except for an elaborate loin cloth, bunched out like a bustle at the back. He wore a pleasant smile and a wicked-looking sword.

'I am Tajang,' he began in confident English, 'I am a Kayan from the uplands of Borneo. To come to school, I have to travel for two whole weeks through the jungle and by canoe. Often the rapids are dangerous and the canoes get upset and people get drowned. For two years I have been learning at Batu Lintang. Now I have got my certificate as a teacher and I shall go home. I shall take a sack of rice. I have my blow-pipe and can kill birds or barking deer. I have my spear and I can kill wild pig. I shall eat. And I shall go back through the jungle and up the river to my own people and I shall teach the children of my own village how to read and to write.'

He then said he would dance and proceeded to do so to the music of the *sapeh* a four-stringed instrument, like a banjo. He started off quietly like a ballet dancer and worked himself into the movements of a sword dance, striking off imaginary heads with a polite flourish which made decapitation acquire

a social-grace. He pirouetted and pranced and swirled faster and faster. The smile left his face which took on a trance-like intensity. Then at the climax of the frenzy, the music stopped abruptly and Tajang stopped transfixed, a rigid figure in carved teak. Then he casually turned, picked up his papers and returned to his seat.

After him, we had a succession of tribesmen—Muruts and Kelabits, and the more sophisticated Malays—each doing a ritual dance in his own costume and to his own tribal music.

This was no students' rag but as much a part of the purpose of Batu Lintang as the text-book lessons. It encourages them to be themselves and not just imitations of the West. English, for instance, is a subject and not the working language. The students are taught in their own diverse languages, which are too distinctive to be called dialects, and the training college is lucky that its lecturers, between them, can cope with all the languages. The deputy principal of the college is a Catholic priest and a Protestant clergyman teaches science but no one is asked to conform to any religion. The Malays are Mohammedans, the Chinese are Confucians or Taoists, and most of the Dyaks, Kayans, Kelabits, Muruts and Melanos, are pagans. The devil at Batu Lintang is Ignorance and the students are not asked to renounce their origins but to start from them.

At one time, students coming from remote parts began to imitate the students from the towns and coast. They cut off their top-knots and plugged the holes in their ears and conformed to shirts and trousers. In some cases, when they returned home, their elders beat them. Ridicule and resentment are bad beginnings for the job of winning confidence in the teaching that they would eventually go back to do. Now they keep their top-knots and their tribal characteristics.

Like Tajang, the Kayan, most of the students are going back into the jungle to teach their own people to read and write and count, but they are also going to teach them how to improve their own handicrafts, to know the soil better and to clean up the worst of their unhealthy practices. This is the sort of thing which Unesco calls 'Fundamental Education'.

Students go to Batu Lintang after four years' elementary

education and remain for two years. There are about 150 students—less than a fourth of the number who offer themselves. The selection is difficult. It cannot be merely by examination because the standards in remote schools are very low and it would be unfair to judge the candidate by the shortcomings of his teacher. But the headmen and district officers keep a lookout for promising youngsters and, after the preliminary sifting, the Principal of the College and his assistants go off on long treks up-country to interview the aspirants. Then, for about a year they get a primary education to make up for the deficiencies of their earlier schooling and afterwards, in addition to a secondary education, they are given an intensive course in teaching methods. 'Intensive' is the operative word. The college day begins at 6 a.m. and the students work until 4 p.m., when they have a three hours' break (usually filled by their own community interests) and then they have evening classes.

Method is largely on the lines of 'Supposing Robinson Crusoe decided to teach Man Friday, how would he start?'

First of all he would need a desk. So he must make a desk, since there is no one else to do it for him. And he must make a blackboard and a bench. That means cutting down the tree, planing the wood assembling the furniture. Then he must decide how Man Friday can be helped to understand mathematics. He must make the abacus--the bead frame—for counting, as well as the rulers, protractors and compasses for geometry.

All these things the students at Batu Lintang are taught to do, with the simplest of tools, such as their own parangs and adzes, but with the greatest ingenuity. For instance, to teach the jungle children addition and subtraction, they have devised a model of a longhouse. Two horizontal disks rotate so that people or animals go in and out of the doors, like the 'wet' and 'fine' figures of weather-houses. As the figures disappear and reappear, the children practice mental arithmetic. Art begins with their own art forms—bold and colourful—which embody their tribal emblems and symbolism. They make their own traditional musical instruments, and while they are taught something of the universal values of music it is in relation to their own.

This is an educational experiment which derives directly

and sympathetically from the environment of the scholar. It is a compromise and not a clash between cultures. If modern advance merely replaces Jabu by the juke-box, the headhunters' dance by swing, primitive fears by 'civilised' anxiety-neuroses and tropical ulcers by duodenal ulcers, the price of change is too high.

The Rajah Brookes, the White Rajahs, who acquired and ruled Sarawak for a century, did not encourage change. They wanted to preserve the Borneans from exploitation. But that was stopping the clock. The outside world has invaded Borneo and the people want to come to terms with it. The demand from the longhouses and kampongs for schools and teachers is insistent. The Borneans want to be convinced that a prescription is more powerful than an incantation.

We heard for instance, of a deputation of Iban women who made an arduous journey to Kuching to ask the medical authorities to do something about the sterility which was beginning to afflict the tribe. Instead of practising fertility rites and regarding their declining ability to have children as a visitation of the gods, they recognised that the doctors could do something about it. And they probably can, because the epidemic of sterility is most likely due to the spread of venereal disease, itself a result of the contacts of the inland tribes with the outer world.

Merdeka

JAVA

IN THE mountains of Central Java, the people cheered the jeep with its United Nations' pennant. Peasants straightened their backs in the ricefields. Women came to the doors of their wattle-huts. Even the toddlers, stark naked, laughed and waved and shouted 'Merdeka!'

This, in Indonesia, means 'Freedom', once a rallying slogan in the fight for liberty and now a boast and a salutation.

They might have been saluting the blue and white flag as the symbol of the UN Assembly and of the Good Offices Commission which had saved the infant republic and brought it to nationhood. But they were not; they were saluting the jeep itself and what it stood for—Freedom, not from alien domination, but from the oppression of a foul disease.

Up there, in the mountains, the struggle for existence was too insistent for them either to know or to care much about the world outside or about the deliberations of the United Nations, but they welcomed the men in the jeep as their proven allies in an elemental struggle. They knew UNICEF not as 'UN' or even as 'The International Children's Emergency Fund' but as vehicles which brought doctors and medical teams and supplies into their villages, and knew that their comings and goings somehow meant their deliverance from yaws. And anyone who has seen advanced cases of yaws will realise why these people so vociferously shouted 'Merdeka!'

A modern doctor reading the symptoms in the Bible might diagnose the affliction of Job as yaws. Certainly his tribulations are those of the sufferers from yaws—tens of millions of them in the tropical world. Yaws is due to a treponema, akin to the micro-organism which causes syphilis. It is not, however, contracted venereally but by the organism invading the body through a cut or sore (and when you work barefoot in the rice-

fields and harvest with your hands, there are plenty of cuts). The first signs are little hard pimples, at the spot where the infection has entered, and these may run together. In the second stage, it spreads to other parts of the body in boil-like sores, which look like raspberries and give it its other name in medical text-books 'framboesia'. In the third stage these become ulcers which lacerate, for instance, the soles of the feet or the palms of the hands. Muscles are eroded and the bones are attacked and deformed. One sees many cases where the face has been gradually eaten away, and the nose has disappeared and the mouth has been distorted into a horrific grin. Unlike syphilis, it does not produce nervous disorders of paralysis and madness, but it produces a state of mind and physical misery which makes life intolerable and death a merciful release. It afflicts every age, even the infants suckling at their mothers' breasts. Where, as is so common, it attacks the soles of the feet, the victims develop 'crab-foot' or 'claw-foot', so that if they can walk at all it is on the sides of the foot or with the foot curled up like the claw of a perching bird.

Nothing could be more eloquent of the tragedy which is yaws than the example of the emaciated boy we met. He was being carried up the hillside in an improvised palanquin—a chair roped to two bamboo poles, carried on the shoulders of two men. They were bringing him from a distant hamlet to the temporary clinic which had been established in the headman's hut at Karangesein.

There he sat, cross-legged like the image of the Fasting Buddha. His face was a gaunt mask. His ribs showed through his scarred skin. His wasted legs and arms were caricatures of human limbs. His deep-sunken eyes contemplated the certainty of death. He was only sixteen but he might have been ninety.

They placed him on the verandah near the gong, a hollow tree-trunk. And he roused himself, took a stick in his claw-like hand and, mustering his frail strength, struck that gong. It was a spontaneous and, at the same time a symbolic act. He was summoning the people of the countryside, in the hills above Jogjakarta, to come and be delivered from the fate which was his.

The gong brought the people crowding round the hut for the opening, in this particular district, of the great campaign

against yaws which is being run by the Indonesian Government with supplies from the UN Children's Fund and advice from WHO.

Indonesia is that new nation, the territories of which straggle, in scattered islands, over a distance as great as that from Ireland to the Caspian Sea and which probably encompass as many diverse ethnic groups, languages and religions as would be met between the Atlantic and the Middle East. Its population is estimated at 70,000,000 and it is reckoned that nearly 12,000,000 Indonesians are afflicted with yaws. Even in that dream island, the romantic and romanticised Bali, one in ten (or more) of the people suffer from yaws. And in the 'regency' or administrative region of Jogjakarta, with a population of 2,000,000, at least 300,000 people have the disease and in some of the villages three-quarters of the population is afflicted.

But in that regency, in the mountains of Central Java, I saw miracles happen. *With one injection of penicillin it is possible to purge the micro-organism of yaws from the human-body.*

In the particular phase of the campaign which we witnessed, it was the practice to give a divided dose, one injection on the first visit and another the following week, because it gave the doctors a chance to make clinical checks on the second occasion. Sometimes they might give a third dose. And there was a follow-up six months later, to deal with cases in which the disease had been latent, with relapses (which might happen) or with reinfections.

The effects, however, even of that split dose, could be sudden and spectacular. Victims who had come crawling and hobbling to the first clinic were likely to come back hopping and skipping for their second inoculation. It can be as dramatic as that—a single shot of the drug can transform a person's life.

But not always—as in the case of that emaciated boy. As he examined the boy behind a bamboo screen in the headman's hut, Dr. Sardadi, the Indonesian doctor, caught my eye and shook his head. He gave the boy an injection and he would give him a second the following week. The disease would leave his body but it would remain a body damaged beyond repair. Only resources of advanced surgery far beyond those available

to this primitive and inaccessible village, could have helped limbs so badly ravaged.

And so the chair was hoisted again on to the shoulders of the bearers and the boy was carried through the ranks of the more fortunate, down that dusty hill.

That flag which fluttered on the radiator cap of our jeep as it bounced along the dykes between the flooded ricefields, or nose-dived into river-beds or fly-crawled up mountain-sides, should have had battle-honours inscribed on it, after the fashion of famous regiments. They would record victories, numbered not in dead but in living. And two of the chevrons would read 'Kulumprogo' and 'Jogjakarta'.

In June, 1950, the yaws campaign was begun in the Regency of Kulumprogo, in the highlands of Central Java, under the direction of Dr. Kodijat, with the advice of international experts and the material help of UNICEF. Dr. Kodijat is already a living legend in the villages of Java, and, unless mankind is utterly ungrateful, he belongs among the great ones in world history. For this campaign, to Dr. Kodijat, was not an assignment; it was the culmination of a life's work. This man of constancy and courage, so reticent about himself and so eloquent about his work, had dedicated his life to the struggle against this foul disease. Between the wars, in those self-same hills, he had been fighting it with arsenical preparations. This was a slow and frustrating method, the limited success of which only accentuated the discouraging failures. Even those efforts were finally interrupted by the Japanese invasion of Java. But with the end of the war came the new possibilities of penicillin and the facilities which the UN had to offer.

On the walls of the WHO/UNICEF headquarters in Jogjakarta we saw the maps of the campaign, with the formidable redoubts of the disease hatched in and with flags showing the changing distribution of the teams as they moved continuously forward in their 'mopping-up' operations.

This campaign, as far as WHO and UNICEF were concerned had started as a limited exercise in which the UN agencies were prepared to assist in demonstrating the new possibilities. But the need was so great and the results so gratifying that it was extended, with their continued co-operation, into a mass-

campaign in which UNICEF provided the supplies and equipment, including transport, and the Indonesian Government provided the personnel. A campaign now being carried into all the islands.

We went out with the teams on their arduous and harrowing journeys which they have to make. I say 'harrowing' because the countryside around Jogjakarta had been an actual battle-field and the whole countryside bore the reproach of man's inhumanity to man. The landscape was scarred with the ravages of successive destructions. First there had been the battles against the invading Japanese. Then after the capitulation of the Japanese, there had been the first efforts of the Dutch to unseat the Government of the Indonesian Republic when it declared itself. Then a later occasion, when there had been an attempt at a Communist *coup*, the Dutch had dropped paratroopers and had captured Jogja and carried off the Cabinet into exile.

Across this battlefield, at some risk, for it was still safer to ford rivers than to cross dubious bridges, moved the forces of a new army bringing succour not misery.

Several days before, the doctors, Dr. Kodijat or Dr. Sardadi or others, had made the first sortie. They had gone out to rally the local leaders and get their support for the campaign. Behind them had gone the head *mantri* or male nurse to make the arrangements. The headmen in each village called the villagers together. And Indonesian 'village' means a unit of about 1,200 people, who may be scattered among many hamlets but who can be summoned by the tocsin of the gong. The headman's job, in each case, was to explain what curing yaws could mean to the individual and to warn that anyone with yaws was a menace not only to his family but to the whole community. The head *mantri* would, there and then, make the first inspection, examining everyone in succession. Where there was actual evidence or any suspicion of yaws, the individual would be told to report back the following day.

That was when the full team arrived. One member, with the headman by his side, checked the notified cases and issued forms. This work had to start at dawn, because they had to catch the workers before they went into the ricefields.

Each case was first blood-tested. A prick and a syringe-full

of blood gave the evidence, which was matched against a colour-chart to check the degree of anaemia. Nearby sat a young Chinese woman doctor, Dr. H. Y. Li, trained for this work at John Hopkin's Hospital, in the U.S.A. She was microscopically examining such blood-samples. This was part of her long painstaking research, not only in the villages but in her research laboratory at Jogja and at the research-hospital which had been set up there. She was concerned not only with discovering a great deal more about the characteristics of the disease but in finding how much or how little penicillin need be used to affect a cure. By this kind of work, the cost of treatment was progressively reduced.

Behind the screen, in the improvised consulting room, Dr. Sardadi was doing his clinical examination of men, women, boys, girls and infants-in-arms. As he made his notes, the cases passed behind another screen, where a female *mantri* in a gay, flower-patterned sarong was giving injections, to the accompaniment of understandable yelps and squalls, but more often of poker-faced fortitude.

The team paused only to drink the cool juice of fresh plucked coconuts, and to eat bananas. And in two days the whole population of the village would be examined or treated and warned to come back for the second injection.

That, apart from the follow-up six months later, was all. Or not quite all, because the miracle of penicillin could only be confirmed by ensuing personal and domestic hygiene, so that the risk of fresh contamination would be reduced. The inoculations, therefore, were only the prelude to systematic public-health education, among people now health-conscious.

Yaws not only blights the individual; it blights a whole landscape. A countryside afflicted by yaws reflects the misery of the people. Houses are dirty; women are sullen and discouraged; the children are listless, sickly and peevish; the crops suffer because the men are unfit; and even the cattle are miserable through neglect.

We would contrast that 'before' with the 'after'. In a yaws-free village, the women were house-proud; the children puppy-happy; the fields were well cared for; and the cattle were sleek.

In the Kulumpingo regency, we saw an even more remarkable testimony to what the removal of a mass-disease can mean. We saw a sight which will remain with me for the rest of my life.

The peasants above the Progo River were constructing a canal through the volcanic mountains. Like gnomes in some weird fairy-tale, copper-red bodies were digging and delving in the squeaky mud at the bottom of a pit or scurrying like ants up a swaying bamboo ladder as long as a fire-escape with baskets of mud on their heads.

It was all part of the incredible scene which I watched under the blistering sun until my eyes glazed and my muscles ached in sympathy with the back-breaking efforts of the toilers. It was as though one had stepped back out of the Twentieth Century and was watching the Babylonian slaves digging the Hillah Canal. In this way and with such primitive tools, they must have diverted the Euphrates. With such freaks of muscular effort, the fabulous Hindu temple of Borobadour, in this same part of Java, must have been built.

The peasants were cutting a forty mile long canal with nothing but their own muscles, pick-axes, mattocks, hammers and chisels. The only contribution of the machine age was a couple of oil pumps no bigger than motor-car engines to check the seepage through the dirt dam, holding back the swirling waters of the river which would presently flow through the canal. For the rest it was just flesh and blood and primitive iron.

When they encountered rocks, they just chiselled their way through. They did not use gelignite because they did not have any and because man-power was still cheaper than explosives. So they used hammers and chisels and wedges to chip and split the rock into pieces small enough for the bearers to carry away in their head-baskets. The practice was to put a boulder 'up to auction'. The foreman would start the bidding and increase his price until he got someone to agree. I saw one massive rock priced at 75 roepiahs (about £4) and the peasant-contractor immediately started on the chiselling job which would take him and his helpers a week. Work which a mechanical shovel or a bulldozer and a few sticks of dynamite could accomplish in a few days took hundreds of peasants

months of strenuous efforts. In a year they had advanced two miles through the volcanic mountains.

Yet these were not Babylonian slaves. They were free farmers working for a greater freedom on an enterprise which they themselves had initiated.

Up in those mountains, life was even more desperate than in the plains. Down below, there was at least wet-rice in those impressive Javanese terraces, contoured like the seats in an arena. In the thirsty mountains, there were only coconuts, bananas, and cassava, from which comes tapioca, the staple diet of these hill-peoples. At the lowest levels of human survival, short of eating slugs, like the Australian aborigines, people turn to such things as cassava, to give them starch for energy. To them, rice is a luxury.

These hill-peoples wanted rice but rice needs water and the Progo River by-passed their slopes. So with new-found health and a new-seen vision, the peasants decided to cut this canal, to bring the water along the ridges so that they, too, might have steep-tiered terraces, flushed with cascades of water.

The Government wanted to help but it could not give the peasants equipment, only advice and a master plan by which the hill-villagers were persuaded to conceive of their canal as something bigger, which would eventually carry the Progo water into a wider area and irrigate 25,000 acres. Under this plan, each village undertook to cut its section by providing volunteers and linking up with its neighbours. The permanent labour was only the action of the workers employed. It was essentially the peasants' own efforts which mattered.

UN experts in Indonesia had urged us to see this remarkable undertaking, not because Technical Assistance had anything to do with it but because of its social significance. Indeed the United Nations could not, as Technical Assistance was then applied, have given material help. Its function was merely advice and a limited amount of equipment to demonstrate the usefulness of such advice. When I, appalled at the effort involved, was disposed to be indignant and say 'For heaven's sake, give them bulldozers and dynamite,' a very wise UN expert taught me an elementary lesson.

'Try to understand,' he said, 'that this is *their* canal. For the first time, they will have something which they do not owe

to the money-lenders. Always they have been in debt for the means of their own existence. Now they are winning their own water. If anyone were to offer material help, they could never believe that it was, in fact, disinterested; they would think that this was again some device of the money-lenders. No, let them make it their way and when they have got their water, then, perhaps, it will be possible to help them to make better use of it.'

Discreetly, the Indonesian Government are giving every assistance and encouragement to such peasant movements, which are finding expression not only in the urge to get better food but to form farmers' clubs, adult education centres and anti-illiteracy classes. And one of the most important is the formation of co-operatives to buy and market supplies but also to provide credits and an escape from the money-lender.

What that can mean can be measured only by the age-old abuse of peasant labour. To get seed, the peasant had to borrow from the Chinese money-lenders. If he borrowed a hundred roepiahs, he would repay at the usurious rate of 15 roepiahs a month -and still be owing the original borrowing at the end of the year. But it did not stop there. When the seeds had sprouted in the nursery-plots, he and all his family would labour from dawn until dusk laboriously transplanting it seedling by seedling into the flooded terraces. Then, when the crop approached ripening, he would drain the terraces. At this point the monc.-lender would arrive in his other capacity as the agent for the rice-mercha... He would make an offer for the green rice, which would be about half what the harvested rice would eventually fetch. And the farmer, to meet his interest-rate and feed his family, would have to accept the offer. Then he would have to husband and harvest that crop for the benefit of the money-lender.

Credit co-operatives can now save him from that. The Government can also help him with improved seeds from special breeding stations and with experts to advise him on how to manage and improve his co-operative societies. It has also started rural extension courses, supplying the experts. It is developing schemes for supplying cattle, to encourage farmers to improve and extend their stock, and it has established publicly owned fish-nurseries to supply the fingerlings which the

peasants 'plant' in the ricefields when they are flooded and 'harvest' when they are drained.

All this marches alongside the other activities—the training of social workers, of health officers for the villages, campaigns to improve nutrition, and encourages sanitation and the development of schools, now working in relays of two and sometimes three sessions a day.

So the 'gnomes' of the Progo Canal were portents. They were cutting their way into the Twentieth Century and, to do it, were moving mountains with their bare hands.

Such peasants want to learn not only to read and to write but to improve their agriculture and there are men like 'Singing Supraptor' ready to help them.

I have to call him that to distinguish him from 'Social Supraptor' and all the others 'Supraptors' who had not got first names nor surnames—because 'Supraptor' is not a family name but a *nom de paix* which many have adopted, or been given. It means 'The Visitor who is Welcome', or we might anglicise it as 'Goodfellow'.

'Singing Supraptor'—'The Singing Visitor who is Welcome'—suited my Javanese friend very well, because his mission in life was to go round teaching farmers how to improve their methods and their crops, by singing his instructions and sending them away chanting choruses about the virtues of green manure.

'You must see and hear Supraptor,' Dr. Van den Ploeg, the FAO adviser, had insisted before we had left Djakarta, the Indonesian capital. 'He is the regional officer of the Agricultural Extension Service and his methods are remarkable.'

'Unorthodox?' I queried.

'On the contrary—traditional,' said Dr. Van den Ploeg.

And so we found when we went around with Singing Supraptor to farmers' clubs with names like 'Tani Budaya' ('At the Sign of the Wise Farmer') or 'Sana Taru Mulja' ('The Place of the Bounteous Crop'). We saw 'fundamental education' at its simplest and most colourful—as simple as nursery rhymes, as practical as a farming manual and as quaint as the troubadour.

What he had done was to return to elementals, as anyone concerned with the soil ought to do. He used five age-old tunes

which, I am told, are the basis of all Javanese music and known to everyone. To those tunes he set words. Some of the verses were pure music-hall, out to get laughs from his audience, like:

'The farmer of Indonesia
Is a simple-hearted chap
Who always does what the Government tells him to do . . .'
(Loud guffaws and derisive cat-calls.)

Other verses were his instructions like:

If we want the best from our soil
And a proper reward for our toil
Our rice must be planted in rows
With manure to make sure that it grows.
We must pick the best seeds
And hoe out the weeds--
But that every good farmer knows.'

And so he went on, through tune after tune. He had picked up the local gossip and worked it into his improvised verses. But he always came back to the lesson and explained in recurring verses what good farming practice meant. They must select their seed not from the barn but from the ripening ears. They must use certain leguminous plants as green manure. At another club his theme might be on irrigation and when and how best to prepare the channels. A simple lesson which would go on singing tunefully in the rice-peasants' heads long after The-Visitor-who-is-Welcome had gone.

These farmers' clubs were heart-warming places—bright and lively with posters which might seem primitive in comparison with the subtle sophistries of Western visual aids, but 'packing a punch' because they were the sort of things that an illiterate peasant might draw in trying to express himself. They came there in their spare time for good fellowship, tea-drinking and rice-eating and once a week they had instruction. They, themselves, provided the musical accompaniment for Supraptor with strange instruments, including bass-effect from 'booping' into hollow bamboo tubes of various sizes.

I have never seen a 'class' enjoy itself more than that

collection of tea-swilling, chorus-singing, cigar-smoking peasants in their turbans and sarongs.

And I have never seen more attentive pupils than those who surrounded the irrigation expert when he was demonstrating how, by co-operatively planning their terrace layouts, each could help all. He used a sand-table on which was modelled the contours of their own familiar countryside and on which they could recognise their own rice-plots. He showed them how by banking and grading and by proper run-off they could husband the water and the soil and prevent the erosion and heartbreak of collapsing terraces.

There was nothing academic in all this. What he was doing was adding up the centuries of experience which have produced those monuments of careful farming—the Javanese rice-terraces. I say ‘monuments’ advisedly because I went to Borobadour, one of the world’s wonders, in this same neighbourhood. This is a Hindu temple, a reminder of the time when the Hindu empire reached down through the archipelago to Bali, and on the ledges of this great ornate pyramid hundreds of Gautama images look out from their niches and stupas. But those terraces of inanimate stone did not impress me half as much as the living Borobadours—those terraces of growing rice which climb the mountains. Every foot (and sometimes the ledges are not more than a foot wide) of soil on the sides of the erstwhile volcanoes is made to yield rice, with ingenious water-management to flood each terrace for the wet-paddy.

Often they yield more than rice because these thrifty peasants have the knack of fish-farming. The fingerlings which they put in when they flood the terraces and which ‘graze’ in the underwater pastures of the growing rice, are about the size of sardines or pilchards when they are gathered three months later. This is a vital source of protein for the peasants, supplementing their rice diet, and the Government’s fish nurseries are making the fish-harvests even greater.

There, in the regency of Surakarta, we saw something of the leaven which has come into the social and economic life of a hard-working peasant population, with the freedom which they valued fervently, with the health-campaigns which have lessened the burden of disease, with the anti-illiteracy campaign

and with the sense of urgency to improve their low standard of life.

With another Supraptor, whom I must call 'Social Supraptor', I went round social centres, clinics, adult education schools and rehabilitation centres. The anti-illiteracy urge, which comes from the people themselves, is intense. Young and old sit together on the overcrowded benches of the schoolrooms. The teachers, in a country deplorably short of teachers, are anyone and everyone who knows and can communicate—civil-servants, doctors, nurses, postal-workers—in their spare-time. They work in relays, morning, afternoon and night.

Perhaps it can all be summed up in the example of a rehabilitation centre for war-wounded of which Social Supraptor was justifiably proud. There we saw limbless men and women making their own artificial limbs—not peg-legs but mobile, aluminium arms and legs, carefully made with new-acquired skills. They had got prototype limbs and books from abroad and had been able efficiently to copy. And as they worked, they were learning their alphabet.

There was something inspiring in a people who could sing their own practical salvation in terms of green manure and in cripples who could mend their own bodies and minds at the same time.

From Central Java we journeyed into the hills of Western Java to the city of Bandoeng. As we approached it in the late afternoon, it looked like a dream city, floating on the clouds with a disembodied peak behind. The mists had filled the valley and rolled in sunset-tinted waves around Bandoeng on its ridge. The whole effect was idyllic but appearances can be deceptive.

When we wanted to pause on our side of the valley to admire Sunset City, our driver replied by stepping firmly on the accelerator and we dived precipitately into the mist. As he explained, it was not safe to be in the Bandoeng Hills after dark. We were liable to be beset by insurgent bands and the sooner we got inside the city the better he would be pleased.

Bandoeng turned out to be a city of contradictions. That graceful mountain was a volcano 'on the boil'. The city was a health resort but behind it in the hills was a pocket of endemic

bubonic plague. Its climate was ideal for treatment of tuberculosis but its own tuberculosis rate was probably the highest in Indonesia. Around it was a rich and fruitful countryside but its people suffered from malnutrition. It had more doctors than any other part of Indonesia but it also had the highest (recorded) infantile death-rate.

In fact, Bandoeng was the victim of its own reputation. Tuberculosis sufferers came to it from all parts of Indonesia because of its fame as a sanatoria centre, but since there was not enough institutions, specialists or hospital beds, active tuberculosis cases had to find lodgings in the city already over-crowded with refugees from insurgent-harassed parts. The visiting patients spread the disease among the inhabitants.

It had been called 'The Paris of the East' because its men and women had the reputation of being the best-dressed in Asia. Certainly the bright and shimmering sarongs of both the men and women and the colourful blouses and coats of the ordinary people appeared to support that claim. But they earned that reputation at the expense of food. A doctor told me that although the peasants grew exactly the right sorts of food which they needed to prevent malnourishment, they sent their fish, eggs, fruits, vegetables, rice and milk to the markets for cash to buy the vivid garments they loved better than their own health. That may be a medical exaggeration but with an element of truth.

The infantile death-rate was announced, while we were there, as the highest recorded in Indonesia but the emphasis is on 'recorded'. It was the only municipality with a complete system of medical statistics and the figures could be taken as indicative not only of how bad things were there but how much worse they must be generally—if actual instead of guess-work figures were available.

One in every three infants in Bandoeng died before they were one year of age. In the four-year age-group between one and five years 150 per thousand died per annum.

They died of congenital weakness, gastro-intestinal disease and pneumonia. Too often the mothers died with them. The congenital weakness was largely due to the exhaustion and bad diet of the mothers before the birth. The digestive disorders followed the weaning, when the mothers put them on to a diet

of rice-water, boiled rice, hot peppers and bananas. The hot peppers cauterised the infant stomachs and prevented them from properly digesting the already deficient foods. Pneumonia was the biggest killer of all and was due mainly to the housing. Wicker-work walls might be nice and airy in the hot plains but up there in the alpine heights they were fatal.

That was the background of 'The Bandoeng Plan' which we had come to investigate- a great experiment in the organisation of health services which the Indonesia Government had started in this city and the surrounding regency, as a pilot project later to be extended throughout the country. It was a scheme to integrate both the preventive and the curative services and UNICEF was helping with supplies and equipment.

The area included a population of 1½ millions and was divided administratively into the city, out-districts, sub-districts and villages. The hospital accommodation in the city was increased to nine beds to every 2,000 of the population. Auxiliary hospitals were being set up in the districts, to be run by *mantris*, or trained nurses, directed and guided by doctors from the centre paying a visit two or three times a week. The *mantris* were capable of deciding what cases needed to be sent urgently to the central hospital and could call on an ambulance service.

Polyclinics were established for outpatients in the districts but, in addition, the villages created their own services. As the basic political and economic units, the villages were made responsible for public health. They could set up their health-centres and employ local 'sanitarians' who had an elementary (Fourth Standard) education 'topped-off' by six months' hygiene instruction. The sanitarian's job was to be the 'Good Neighbour' who knew all the people in his neighbourhood and could make, and keep, them interested in improving the sanitary conditions. He was trained to keep records of births, deaths and marriages, and of infectious diseases.

This system had to be built up under the greatest difficulties because of the shortage of doctors and qualified staff in Indonesia. Bandoeng was reckoned 'well doctored' (with the advantage of being a seat of a medical school) but there was still only one doctor to every 30,000 of the population. In the rest of the country, the position was twice as bad as that.

The Government had to take drastic measures. They closed

the six big cities of Indonesia (although they had not adequate medical personnel) to new practitioners, who, on qualification, must go into the neglected rural areas for at least two or three years.

Three medical colleges have been established in the young republic but in ten years they will be able to produce, at the most, 200 more doctors. More colleges will have to be created and staffed and the WHO has been helping with fellowships enabling students to be trained abroad so that they can go back and train more.

But to get the supply of students for the medical colleges, there must be more elementary and secondary schools and, in the grass-roots, an intensified anti-illiteracy campaign to supply the influx of recruits to both.

In the terms of reference of our mission, Bandoeng figured as 'problems of organising a health-service', and it represented a microcosm of a situation which presents the greatest difficulties throughout that two-thirds of the world which we call 'under-developed'.

There are 900,000 doctors in the world. In the developed areas which represent one-fifth of the countries, the average number of physicians per 100,000 population is 106; in the 'intermediate areas', the proportion is 78 and in the under-developed, 17. Even those discouraging figures exaggerate the availability of doctors because of the tendency of qualified physicians to concentrate in the cities and towns, to the neglect of the villagers and the country people. The scarcity of nurses is even greater. Nor can there be any question, even if it were a practical proposition, of redistributing the world's medical personnel, because the shortages are relative. In the advanced countries, there is a chronic shortage of doctors and nurses because, with the changing nature of medical progress, more specialised supervision is required. So the problem can only be solved by producing the medical personnel within the countries themselves. Thorough medical training and full qualification takes time and a temporary solution will have to be found in medical auxiliaries from whom neither high educational rating nor a degree will be required. That was why we toured the countryside seeing the *mantris* and sanitarians at work in Indonesia. There are many types of such 'medical

craftsmen' or 'apprentice doctors' in the world—the Health Visitor, in India; the 'Feldshers' or Assistant Physician Health Educators, in the USSR; the 'Native Dressers', in British African Colonies; the Dispensers, in Sarawak, and the peasant officials who act as 'Health Activators' in South America. They serve a useful and effective purpose and are the 'Home Guard' of any medical campaign until the fully qualified personnel emerge from the national medical schools or return from foreign training.

This improvisation is not diluting the quality of real medical requirements, which are demanded from degreed doctors, and, for the time being, it is working side by side with the unqualified practitioners of indigenous medicine. And, as we saw in Bandoeng Regency, it is shaping a pattern of health-service which must be quite different from that which has grown up in the West, where, in the past century, health was bonus from the wealth which accompanied technical development. There it is a precondition of that development and the initiative, and the charge, must rest upon government.

The Bandoeng Plan, therefore, is a pilot-project with a meaning for the underdeveloped two-thirds of the world.

CHAPTER THREE

Phra Norn Nong Pung

THAILAND

'HE who has followed the Eightfold Path to Enlightenment is incapable of deliberately depriving a living creature of life'. . . . The first of the Nine Incapabilities, the injunctions of The Lord Buddha to his followers who would achieve Nirvana.

Thailand, it is to be remembered, is a devoutly Buddhist country where every man at some period in his life is expected to shave his scalp and his eyebrows, put on the saffron robes and enter a monastery for a spell which may be only a few months or may be for life. And the period the short-term monks usually choose is the Buddhist Lent which coincides with the monsoon. One of the reasons for going into retreat at this time is because, in the rainy season, the little creatures which crawl come out of the ground and in the jostling world outside the temple one might step upon them. Even those who recognise their human frailties and cannot aspire to the Eightfold Path would still hesitate to kill a creature because he himself might be such a creature in another incarnation. The devout Buddhist, therefore, would not choose to kill even a mosquito, although, of course, that insect does not share his scruples and is liable to kill him with malaria. Consider, against that background, the difficulties which confronted the doctors who, in 1949, prepared to launch the Malaria-Control scheme in Thailand.

The Thai Government had invited the help of the World Health Organisation, which responded, supported by the substantial help of the Children's Fund. It appointed Dr. Sambasivan, an Indian, as the head of the team. It was a wise choice on many counts. It showed that, in United Nations' work, there is no assumption that the West 'has all the answers' and it showed that peoples of a region have qualifications to help each other. Moreover, the Eastern mind of Dr. Sambasivan

could better interpret scientific ideas to other Easterners, with a full awareness of their susceptibilities; and, above all, he brought to the task his own remarkable qualities.

For one thing, he recognised that the work could never succeed without a complete alliance between traditional religion and modern science. He saw the Governor of Chiengmai and secured the cordial co-operation of the civil authorities but he also interviewed the Chief Abbot of the North. And the result was that the Chief Abbot took the opportunity of the great festival of the *kathin*, which marks the end of the Buddhist Lent, to make an appeal to all Buddhists, including the monks and priests, to co-operate with the World Health Organisation and the doctors. To the people who had flocked in their thousands to the Great Temple of Chiengmai to bring their votive offerings, he made a forthright speech.

'You have built all these temples,' he said, 'but how many hospitals have you built?'

Later, in Bangkok and Burma, I had long debates with Buddhist philosophers--arguments which went on far into the night--on the Abbot's encouragement of the killing of the mosquitocs. Some condemned it but one authority justified it on the grounds that in death there are degrees of suffering and that the sentient being, the human organism, suffers more than the lesser creatures and that, although it remains a sin to kill anything, even a mosquito, the sin is qualified because the death of a mosquito may mean less suffering for men, women and children who suffer more from malaria than the mosquito does from D.D.T. In any event, Buddhism is a highly personalised religion. It is the individual who is struggling towards the higher way, who by supreme merit may hope to achieve Nirvana, which is not a heaven but a release from the limitations of existence and the necessity to be born again, or who by his behaviour in his present life may determine the form he or she will take in their next incarnation. Nobody can acquit or absolve him from the responsibility for his acts but neither is he responsible for the acts of others. So that, while a devout Buddhist might not himself kill a mosquito, he could stand aside and let others do it.

That was how it transpired. The priests responded to the appeal of the Abbot by throwing open their monasteries,

temples and pagodas to the doctors and their teams of DDT sprayers. They turned their pagodas into clinics for the examinations and later on they made them available for mother and child health work.

We saw the kind of thing which happened when we went out with the spraying teams two years later. We went, in particular, to the Wat Phra Norn Nong Pung, which means 'The Temple of the Reclining Buddha of the Humming Swamp'. It had been one of the first temples to co-operate.

The teams with their jets of liquid DDT went into the temples and sprayed the priceless mosaics and images. The priests gathered round in their saffron togas, their heads and eyebrows close-shaven. They smiled their silent approval upon the proceedings. And so did the Reclining Buddha, a recumbent image, 65 feet long and sheathed from head to foot in gold-leaf, an image so big that they had built the temple around it.

The spraying of the temples was not to protect the images, the mosaics or even the monks, but as an example to the villagers whose huts had to be sprayed. It was to reassure them and win their confidence for the work of the doctors. And when we visited Phra Norn Nong Pung the name had become a misnomer, for the 'swamp' had ceased to 'hum'.

The malaria-carrying mosquito had disappeared. So had the infantile spleen-rate, that index of new cases. We did a check. With the mosquito hunters we went out into the low-lying fields, into the wet paddy and into the irrigation streams and looked for larvae of the *anopheles minimis*, the midget mosquito which was responsible for this region being a hyper-endemic malarial centre. The person who did not have malaria had been the exception. In a day's search it was impossible to find a single vestige of the *minimus* and we could have hunted as unsuccessfully through the whole of Scrapei.

In the temple of the Reclining Buddha, we set up a clinic on the steps of the pagoda—the sort of clinic which had been held there regularly throughout the whole of the campaign. In the verandahs, or cloisters, of the temple were the desks and the blackboards of the lay-teachers and the children chanting their lessons. (Another feature of Thai Buddhism is that it gives house-room in the temples for compulsory civil education.) At the sound of the bell, the children came tumbling out of their

classrooms and, in a hilarious romp, stamped across the temple courtyard and up the steps of the pagoda.

Dr. Udom, the Thai doctor, had borrowed an altar table as his clinic couch and each child came forward in succession, put down his or her little round hat on the ground and scrambled on to the table. Dr. Udom pressed their little stomachs to find the tell-tale swelling which, in malaria-sufferers, bulges with the overwork which the disease imposes on the spleen. And as the leaf-bells on the tiered eaves of the pagoda tinkled in the breeze, the children answered the doctor's questions. No, no pain. No, they had not had the fever. No, there was no fever at home. The shaking disease had left their lives.

In other parts of the world there have been spectacular victories over malaria. Even before the use of DDT, the disease could be cleared by systematically seeking out the breeding places of the mosquitoes and either draining pools or treating them with oil. Then there was the heart-warming examples of malaria control in Greece and malaria-eradication in Sardinia and Cyprus, where the islands were entirely freed from the disease by spraying the breeding places of the disease with DDT. The distinction between 'control' and 'eradication' is to be noted. An eradication-programme sets out to eliminate all vestiges of the disease. A control-programme is less ambitious; it aims so to reduce the incidence of the carrier and of the disease to proportions where it can be managed by the public health services. Eradication is possible under island conditions where, once the local mosquitoes have been disposed of, supervision at the airports and seaports can ensure that malaria carriers do not again enter. In the case of land-locked countries, that is not possible because there is always the risk of fresh migration of insects, which means that measures such as DDT spraying have to be continuously maintained. A 'control' programme might, in fact, 'eradicate' the mosquitoes and the disease but it would be rash to assume so and to relax the control measures. Supervision and spraying has to be continued.

When Dr. Sanbasivan arrived in 1949, he had to plan a campaign which would be economical in man-power and in

DDT because it had to be scaled to commitments which Thailand could afford to undertake in extending the lessons of the demonstration project and in maintaining the control when the WHO and UNICEF moved on. This was a question not only of the financial resources of the country but of the resources of medical personnel; Thailand is short of doctors.

First, it was necessary to select a workable area and the one chosen was around Chiengmai, the principal city of Northern Thailand, in the hills beyond which lies Burma. This was a hyper-endemic malarial area—that is, malaria was constantly present, not flaring up into sudden and deadly epidemics but robbing 60 to 70 per cent of the population of health and fitness and always liable, like a sleeping volcano of disease, to erupt into epidemics.

Second, it was necessary to find the mosquito or mosquitoes responsible for the disease in this part of the world. There were thirty types of mosquito in the region, any one of which might be the villain. They were lucky: the very first day on which they began their search, Dr. M. L. Bhatia, who had joined the mission from the Malaria Institute of India, and his assistants found the spores of human malaria in the salivary glands of the thirteenth mosquito which they examined—the *anopheles minimis*. They had, of course, to eliminate every other possibility, since there might be more than one carrier. (This search is a continuing one in case a new carrier should appear or one of the other *anopheles* should turn malarial or the *minimus* should develop DDT-resistance.)

Third, they had to study exhaustively the habits of the *minimus*. They found that, unlike certain other mosquitoes, which favour stagnant water, it bred in fresh, running water. This meant that the experts could chart the area of its operations since it belonged chiefly to the irrigation canals fed from the fast streams of the hills and could not survive in the sluggish canals of the lowlands.

Fourth, they had to find the bases from which it attacked humans. They systematically examined the peasant huts, built on stilts, with plaited mats for walls and *attap*, a brown, broad tobacco-like leaf, as thatch. They searched every nook and cranny, trapping the mosquitoes by sucking them, pipette-wise, through a tube into a container. After studying the

behaviour of 15,000 specimens, they satisfied themselves that it rarely rested higher than eight feet from the floor of the hut, that it lurked in the walls, and not in the roof, and in hanging clothes and domestic utensils, and that it was mainly active between 9 o'clock at night and 4 o'clock in the morning.

Fifth, they had to try out the effectiveness of DDT spraying on the various types of surfaces—to find whether, and how long, it would persist on the plaited bamboo of the walls.

Sixth, they carried out a survey of the human population. They examined thousands of children to find the proportions with enlarged spleens and made blood tests of children and adults to find how many had malaria.

With all the available information, Dr. Sambasivan, Dr. Bhatia, and Dr. Udom and Dr. Vimol, the two Thai doctors assigned to the international team, then planned their campaign. The first district chosen included the homes of 40,000 people. With their knowledge of the behaviour of the *anopheles minimis*, they decided to spray the walls and domestic appurtenances only to the height of 8 feet from the floor, with a consequent saving of DDT, and only once a year. They ignored the breeding-places because if they succeeded in killing enough adult mosquitoes, they would reduce the breeding anyway. They were attacking 'the airstrips' from which the *anophiles* took off on their sorties against the humans in those seven hours of night.

The civil authorities and the priests co-operated so enthusiastically with the teams that there was no difficulty with the villagers. The sprayers worked systematically, spraying every hut in turn and then painting a sign on the hut, such as 'A/16 DDT 21/4/50', meaning the particular village, the number of the house and the date of the first spraying. So thoroughly was this done that the DDT sign is now the postal address and civic identification of the householders.

At the end of the first season, the Thai members of the team were entirely capable of handling the scheme and the international members discreetly withdrew into the background as advisers and instructors and not as directors. This tactful move strengthened rather than weakened their authority because their influence with the Thais depended on respect and friendship and not on vested powers. UNICEF was

supplying the DDT spraying apparatus, the insecticide and the vehicles, for this pilot project and the Government were matching the cost in providing personnel.

The second year they extended the project to five times as many people and at the same time trained and advised the personnel which the Thai Government detailed and financed in an adjoining district of Hangdong. This is another feature of the UN operations—direct help in the demonstration areas and a 'spill-over' of experience into a wider area so that more and more personnel are trained by primary and secondary methods. The Hangdong experiment was so successful that it too was extended five times and yet another scheme, deriving from the team at Chiengmai, was started in Central Thailand, where WHO itself provided the materials as well as the advice. These pilot projects also provided training facilities for trainees sent in from other countries, under UN fellowship arrangements, and for the United States personnel who, under Mutual Security Administration, were coming in to extend the work of the WHO and UNICEF to other parts of Thailand, including the rice-lands of Southern Thailand.

By killing, with the persistent poison of DDT, the adult mosquitoes, the Chiengmai methods broke the cycle of malaria. The infantile spleen-rate had diminished to 'Nil' and the continuous searching for larvae could not, in 5,000 man-hours, over the entire area, find a single surviving *anopheles minimis*. This does not mean that it, or another malarial carrier, may not reappear, because they may come again, as the *minimus* did originally, from other parts. (Malaria came to Chiengmai from the Burma hills when the irrigation canals were started.) There is always the chance that DDT-resistant species may develop and produce epidemic malaria, in lethal instead of lingering form. Such things are foreseen in the training and planning. The Thai doctors are now pathological and clinical experts, epidemiologists of consequence. They have well-equipped laboratories and experienced staffs to maintain the vigilance which is necessary. The only thing which will defeat them is any failure of supplies of the proper insecticides (and it may be necessary to switch from DDT if resistance-strains appear) because—as was stated in the general assembly of WHO—malaria has been damped down, but if there is a failure

of insecticides it will flare up with the violence of a forest fire.

In the winter of 1951, the WHO UNICEF pilot-project was completed in Northern Thailand. It was appropriate that the end should coincide with the *kathin*, the festival which had been the occasion of the Chief Abbot's appeal in 1949.

Our mission arrived at Chiengmai at the time of this *kathin*, and we were able to take part in what is surely one of the most colourful episodes in medical history—and 'colourful' in literal sense of the word, because it was certainly an eye-dazzling occasion.

I went with Dr. Sambasivan to say his good-byes to the Governor of the Province, who had not been there at the beginning but who had enthusiastically supported the work, which his predecessor had sponsored. He spoke movingly of what the help of the international agencies had meant to his people, what it would mean, in its extension, to the whole of his country and, by example, to the other malarial areas of the world. He proposed to celebrate its culmination by a great procession through the streets of Chiengmai and to couple this thanks to the United Nations with a practical and permanent testimony—to raise funds for a big social centre in Chiengmai, a common assembly hall for all the religious bodies and racial groups as well as clinics to extend the medical work which had been started. He proposed to have this procession led by the Court Dancers, who would dan. · their way through the streets to the great temple.

Then we went and saw the Chief Abbot. The only thing which distinguished him in the sw. rm of shaven-headed monks in the monastery was that his yellow-robcs were shabbier and his red parasol more decrepit, for, in Buddhism, the more eminent the teacher the greater his humility. We exchanged courtesies—'Swadi' with heads inclined over hands held, palms together, close to the breast. And I thanked him for all he had done to help the doctors of the World Health Organisation and for the example he had set to his fellow-priests. He demurred; why should he or the priests be thanked for obeying the spirit of the Lord Buddha and seeking the living well-being of the people; science and religion were as one, he said, when they strove for the good life.

We recalled the *kathin* on which it had started and the celebrations which the Governor had called for. He, Chawkun Tepmunee, Chief Abbot of the North, then made his proposal—that they should bring out The Golden Buddha to hallow the occasion.

This was an extraordinary suggestion, because The Golden Buddha is the rarest and most precious image in the north of Thailand. It is enshrined in a dark pagoda and is brought into view only once a year. This was not the occasion, but to mark his appreciation of what the doctors had done he was prepared to make a special dispensation.

And so, on the great day the procession started off from the Governor's Palace. There was the Corps of Court Dancers, exquisitely beautiful, in vivid dresses, with crowns of flowers and six-inch long golden finger-nails. In their bare feet, they danced in the streets, every movement of their hands, of their feet, of their bodies, twisting to the slow rhythm and spelling out in the 'Alphabet of the Dance' legends without words.

In the miles-long procession was the 'busabok', the ceremonial car, drawn by ropes. To these ropes clung expectant mothers, the sick and the strong, the young and the old, dragging it slowly to the temple and on it was the Money Tree, whose spreading branches were smothered in leaves—Thai banknotes contributed by the city organisations. Women, with silver begging-bowls, collected thousands of 'bahts', the Thai currency, from the spectators.

The procession moved on to Wat Suan Dawk, the great monastery temple where hundreds of saffron-robed monks, under their scarlet parasols, were assembled around their Chief Abbot.

And there, in the sunlight, before an altar smothered in flowers, was the dazzling, radiant image of the Buddha.

And the Court Dancers danced on the lawns in front of The Golden Buddha to celebrate The Death of a Mosquito.

The end of the WHO's malaria-control project was just the beginning. The alliance of science and religion went further.

With Dr. Sambasivan throughout the malaria campaign was Nurse Margaret Cannon, from Dublin. I had known Peggy Cannon before I met her, because I had seen reports on her and from her at headquarters in Geneva. She was a legendary figure there, a 'character' whose exploits were enriched by her native wit and her Irish humour. (Nobody was surprised, for instance, when she took two gibbon monkeys home with her on leave to Dublin.) And she more than came up to expectations.

She remained behind when the malaria team moved on because she had agreed to help with the Mother and Child Health Campaign, again under sponsorship of WHO and UNICEF. But, in fact, malaria-control always meant mother and child health to Peggy Cannon. Over 70 per cent of the children in this part had suffered from malaria. Most of the mothers were also victims and malaria is not only a wasting fever; it is a death-hazard in childbirth because it produces anaemia and the least haemorrhage can be fatal. Furthermore, the uncouth methods of the local midwives, male and female, are calculated to produce serious haemorrhages—apart from the child-bed fevers they carry, with their filth, from one confinement to another.

When the mothers die, the babies are almost certain to die too. Nurse Cannon took me to the McCormick Hospital in Chiengmai and the missionary-doctor showed me the orphan ward—mites whose mothers had died before they could nourish them.

'Most of the orphans die,' he said. 'There is no such thing in these parts as infant food or babies' bottles. Wet-nursing is largely out of the question because most of the nursing mothers in the neighbourhood are scarcely able to suckle their own babies, let alone feed another's. So the bereaved fathers have to feed them on the only food available. Rice, even rough vegetables and chili peppers are given to infants who should be at the breast. They cannot digest and they follow the mother—unless they are brought here. Unhappy fathers will carry their motherless babies days' journeys from remote villages to this hospital. We never turn them away, although we too have difficulty in feeding them. Thais do not drink cows' milk, through ignorance not through taboo. Such fresh milk as exists is itself dangerous, because the cattle are disease-ridden.'

When UNICEF made dried milk available we were able to save more orphans.'

One of the effects of malaria is to reduce the power of the body to absorb the beneficial values of food. That multiplies the risks to both mother and child, who already suffer from the age-old habits of women, who here as in other parts of Asia have perverted, superstitious fears about certain types of food when they are expecting, or nursing, their babies. And those foods, especially banned fruits, are usually what the mother most needs.

So the nurse from Dublin, who never forgot nor allowed anyone to forget that she was Irish, came into this strange oriental world where her clinics were held in pagodas and her allies were the barefoot, sheeted monks who silently withdrew into the shadows.

A typical Cannon situation was the temple of Doisakit, an out-of-the-way village in the mountains. The clapper-bells were drowsily tinkling on the curled eaves of the pagoda. The monks had wound their robes around them and were asleep on their prayer-mats before the Buddha. Fathers were nursing the children under the banyan trees and the mothers, attending the ante-natal clinic, were sheltering under their parasols or finding shade in the temple porch. A class of *moh-tan-yaes* gathered in the courtyard. Half of these midwives were male and all of them illiterate and dirty. In front stood the nurse in her starched overall and sister's cap.

This was no docile class. These midwives had been induced to come along, but very much in the spirit of hecklers at a meeting. An argument developed between Peggy Cannon and one of the male midwives, who claimed, outrageously, to have delivered 900 babies and never to have lost a mother or a child. His claims were emphasised by a squirt of red betel-juice from the chaw he was working with his blackened teeth. It was not a very fair contest, because international good manners prevented Peggy from calling him the liar he was, and her interpreter could not convey the inflection of her Irish scorn. So she asked him how he set about delivering a baby. . . .

Her reply was to put a basin on the table and begin to soap her hands and arms, lavishly emphasising how essential it

was for a midwife to be scrupulously clean. The faces of listeners were a study. A female midwife who was in process of lighting a long green cheroot paused and gaped in toothless astonishment. The others nudged each other as though she were doing a conjuring-trick, and the old reprobate who had claimed the 900 babies was bouncing up and down in excitement. The outcome was not as impressive as the effect; in fact, it was an anti-climax. You see, they expected her to produce the baby from the frothing suds!

She went on patiently with her lesson with a plaster-cast and a rag doll and gradually the heckling gave way to rapt attention and grunts of assent. They had come to jeer but they had stayed to listen and to learn.

Then she went to the rescue of one of her student-nurses, a young Thai girl who was taking a class of mothers and trying to explain why they should eat the forbidden fruits. The mothers were openly derisive and the girl was not making much headway for the obvious reason that she was repeating what she had been told and did not quite believe it herself. Nurse Cannon 'weighed in' with hearty humour and told them that if they wanted babies as big as she (and she is twice as big as the average Thai woman) they had better eat so and so—picking up the fruit from the basket. They entered into the spirit of it and one woman got up and pinched and prodded the nurse to see whether she was solid. When they had their laugh, she became serious and picked up a fractious infant from its mother's lap, exposed its spindly legs and arms and the sores upon its face and took the lecture on from there.

It is a slow business wrestling with ignorance, superstition and poverty and the outcome will not lie with Nurse Cannon but with the Thai women doctors, trained midwives, health visitors and nurses whom she is coaching and helping. These new women of Thailand are enthusiastic and self-sacrificing, and as their numbers multiply so will the women and children of Thailand forget their fears and learn that vitamins are not just an alien cult.

Of course it is difficult for them to understand why milling their rice should produce beri-beri. If educated Western peoples, with at least an elementary knowledge of vitamins, will prefer

white bread to brown, how can we reproach the people in the East for liking white, polished rice better than brown? It is silly of them to invite vitamin-deficiency by rejecting the virtues of the rice and it is an irony that beri-beri in this part of the world is an index, not of increased poverty but of marginal prosperity. When a peasant has a good harvest and therefore can eat well, he is likely to invest in a rice-polishing machine which the Japanese are peddling successfully. He and his family get beri-beri but they still prefer white rice.

Miss Jean Ritchie, of Edinburgh, Regional Nutritional Officer of FAO and Dr. Amara Chandrapanond, investigated an epidemic of beri-beri in the Chiengmai region and found about 2,000 cases. They had the characteristic staggering gait and swelling of the ankles and hands, with muscular weakness and a tingling of the nerves. Their diet consisted largely of glutinous rice which was soaked for 10 to 12 hours before steaming and the soaking water discarded. They kept chickens and pigs, but they did not like eggs and produced them as a cash-crop. They were forbidden by law to kill their own pigs which had to be sold to official slaughterhouses and they had to buy their own pork (and rarely) in the market. Expectant and nursing mothers ate only rice and a few herbs. The epidemic coincided with a successful sales-drive, which persuaded peasants to buy small rice-mills.

The answer would be not to polish the rice, but that is now asking too much. Or to reduce the amount of polishing and that has been partly successful. Or to do what is done in India, to parboil the rice before it is polished and retain the vitamin. Or, some suggest, the polished rice should be fortified with artificial Vitamin B. That is to say, you extract the vitamin and feed it to animals, leaving the dubious luxury of the white rice, and then you add thiamine, paying some pharmaceutical concern to produce it. I think the result in Thailand would be to improve the health of those sickly dogs which the Thais, as Buddhists, cannot destroy and which roam miserably around. As Miss Ritchie's report showed, the Thais soak their rice and throw away the water, and they would throw away the 'fortification' with it to the benefit of the dogs who lap up the puddles.

There is yet another way—to diversify the diet and increase

the availability of Vitamin B and high-class protein. And it was our investigations of this possibility which took us on a strange errand into the mountains on the borders of Indo-China, to the fish-farms at Payao.

Our host was His Serene Highness Prince Kosol Suriyong, but his title was deceptive although authentic. He was a cousin of the King of Thailand but he was also a fish-technologist, practising the hard way. His was no palace, but a loghouse in the swamps and his Japanese princess did the cooking. And very nice cooking, too! It was not mere Gallic politeness which made Eric ask her for the recipes of her sweet-sour carp and that delicious *entremets* which tasted like *marron glacé* but turned out to be just humble haricot beans treated with caramel. And there was nothing *noblesse oblige* about the enthusiastic willingness with which she let him into the secrets of her kitchen stove. There was the same craftsman's enthusiasm about her husband's discussion of the private habits of the Chinese carp, the iniquities of the water hyacinth and the respective merits of bran and ants' eggs as fish-fodder. He studied fish-technology in Japan and chose this remote station in preference to the court life of Bangkok.

We were housed in a pavilion built on piles over the swamp and through the cracks between the floor-boards we could see the fish leap up to catch the insects. At night, we were smothered by the myriads of insects which swarmed around our lights—mosquitoes, dragon-flies, moths and fireflies. We breathed them and swallowed them and were practically eaten alive. The only compensation for our physical discomfort was the pyrotechnic display over the water—a regular Broadway or Piccadilly Circus of lamps going off and on with a curious synchronisation. It was produced by the fireflies darting in and out among the water-hyacinths, which sound so attractive but are a pernicious weed which chokes the lakes and rivers of this part and destroy the fisheries.

Such sympathy as I had to spare from myself and my insect bites I lent to Herbert Steinhouse. The recording machine which had been so temperamental was behaving quite well for the moment. Herb had been consoling himself that in the quiet of this mountain retreat we could record a few broadcasts

to which both of us were committed and have a recorded discussion with Prince Kosol on fish-farming. Quiet! It was a radio-man's nightmare. We could not even deceive ourselves that it was at least authentic background. There was the hum of a noisy generator—the noise of millions of crickets; there was the sound of a badly oiled clock being continually wound—the croaking of legions of bullfrogs; there was the heckling of a rude interrupter calling 'Tokay! Tokay!'—the *tookkay* lizard, slithering over the walls, aided and abetted by the clucking of the smaller *chinchok* as it guzzled up the insects; and there was the 'phlop' of countless fish leaping out of the water baited by the flies which gathered in the glow around the pavilion.

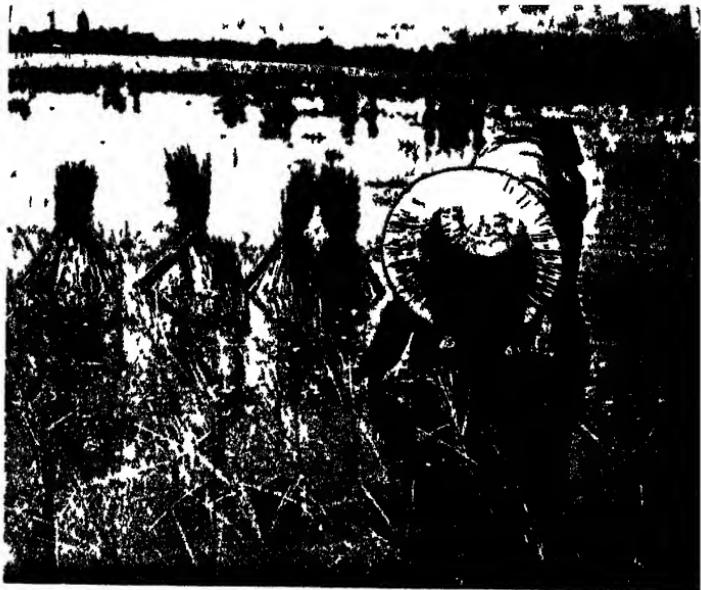
Kwan Payao was the Inland Fisheries Research Station, with Prince Kosol as its head, and it is situated where a vast swamp tumbles over a cataract and becomes the Mae Ing river, on its way to join the mighty Mekong, on the borders of Indo-China.

The research station and the extension service, designed to persuade farmers to farm fish, to grow them in their fields and to harvest them, are part of a constructive effort to supply the nutritional deficiencies of the Thai peasants and also to provide the additional food for all those additional mouths which the control of malaria and other life-shortening diseases creates.

The peasants of the interior and in the mountains cannot depend on the harvest of the sea or upon the brackish-water fisheries which can be developed in the sea coast marshes. Communications are bad and fish rots quickly in the tropics. So if they are to have fresh fish they must find them within easy reach—in their own backyards, gathering them as you might pluck a head of lettuce in a kitchen garden.

That is what Prince Kosol and the Division of Agriculture, with advice and help from the Food and Agriculture Organisation of UN, are trying to achieve. And here, at Payao, was the fish nursery of the North.

One thing he was trying to do was to encourage the instincts of the local fish and turn the swamp into a fish-reservoir. This scheme provided one of the show-pieces of the station—the fish-ladder up the cataract. The salmon-runs and salmon-leaps of North America may be more spectacular but no more



LACDA LANDSCAPE: SERIES OF WOMEN
TRANSPLANTING RICE



LACDA LEAVES: THE SHAW
IN NUDITY APPROPRIATE IN THE SPHERE
OF THE TEMPLE AND CLERICS
WITH DDT



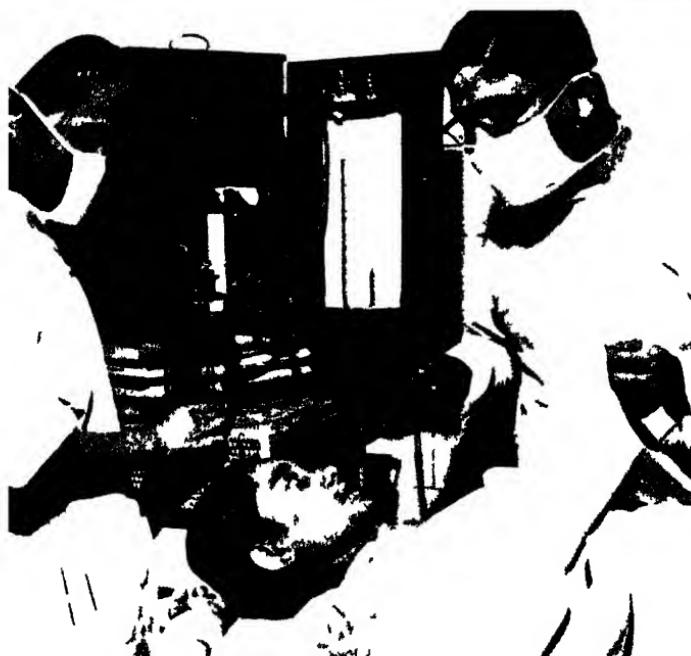
LACDA MOTHERS: NURSES
CUNION OF DUBLIN HOLDING A
PRENATAL CLINIC IN A BUDDHIST
TEMPLE

THE WHITE PLACE

The waiting room of the Rangoon tuberculosis clinic where thousands attend for examination and treatment including Mi Lin Lin Yee sitting with downcast eyes within the verlet.



MAY LIN LIN YEE was a 500 patient. She attended regularly to have her lung treated.



fascinating than the acrobatic feats of the little *pla soi*, the local name for the *cirrhina*, which we watched battling their way against the enormous odds of the cataract. The water spilled over the rocky ridge into a deep pool where lurked bigger fish which preyed upon the *pla soi*. These were no bigger than a sardine, but they were fighting their way upstream against the current, not, like the salmon, egged on by a progenitive urge to find their breeding-grounds, because they breed downstream, but urged on, according to Prince Kosol, by an insatiable ambition to reach the Big Water, the swamp which is a sort of piscatorial Nirvana.

Within a few yards of their ambition, they were confronted by the cataract, which, no matter how desperately they might try, they could never surmount. Alongside, Prince Kosol had constructed a fish-ladder. This consisted of twelve steps; the first and last were a metre high; the others were gradients and across them at angles were baffles which braked the downrush of the torrent.

The shoals of *pla soi* approached the fish ladder and it was a freakish sight to see them fling themselves out of the water, trying to leap the first step ten times as high as their own length. (Imagine a man jumping an obstacle 60 feet high!) About one in a hundred achieved it 'first go'. If they cleared the ridge nose into the current, they were all right but the slightest divergence and they were swept back or were flung on to the side of the ladder. The other 99 tried again—if they were not gobbled up by the cannibal fish waiting expectantly in the pool. Those which negotiated the first step successfully swam steadily up the next nine steps, protected by the baffles, and then the death-or-glory leap was repeated on the last step, and again many staggered, failed and tried again and again. It did not seem possible but Prince Kosol assured us that the majority win through.

This was not strictly fish-farming. The most popular fish for that was the common carp, which the prince was breeding by the hundred thousand. But in some of the experimental ponds were nine other types, including the Chinese carp, esteemed as the greatest delicacy but a difficult creature. It truculently refuses to breed outside its natural habitat and the fingerlings had to be imported and, like store cattle, fattened

up. They just went on eating until they acquired the girth and proportions of a Chinese mandarin.

The fish were fed on a mixture of bran and weeds, livened up with ants and ant-eggs, which are easily come-by in this part of Thailand (as I, too, by my personal discomfort, could testify) because all that is necessary is to collect ant-hills which grow to man-height and more.

Prince Kosol discussed with us his plans to have powerful beacons playing on the surface of the ponds at night so that the nocturnal insects would be attracted and the fish could feed off them. From our experience in that swamp pavilion, the fish will feast to satiation.

Fry, fingerlings, or baby-fish were scooped out of the ponds into water-casks and given free to any peasant who would make a pond according to the prescribed specifications. Over 125,000 fish a year were distributed from these ponds. And when one considers that in a year a common-carp grows to the length of 39 centimetres average and weighs a kilogramme, that means quite a lot of fish-protein. It also makes the carp a profitable cash-crop because a kilogramme can fetch, in the cities, about 43 or 70 U.S. cents. That is liable to defeat the whole object and repeat the story of the eggs the peasants do not eat and of their pigs whose meat, when slaughtered, they cannot afford to buy. That price is nearly three times as much, per carp, as a peasant can earn in a day. An acre of fish is worth fantastically more than an acre of rice and there is a distinct tendency for farmers to convert their ricefields into fishponds. If the fish were for local consumption and not for luxury markets that would not be so bad but when rice is still the staple diet this might produce deficiencies. One answer of course is to make the fish so abundant that they could be both a subsistence crop and a cash crop.

Or there is another way. At Payao, I saw *tilapia* fish. This is a remarkable creature with a strange history, as far as South-East Asia is concerned. It was *tilapia moxambica* which gives a clue to its original habitat—East Africa. But just before the Second World War, a fish expert happened to visit a Javanese fish-growing peasant at a time when he had found, in a Javanese lagoon, five specimens of an unfamiliar fish. The expert Mr. W. H. Schuster, who happened to pass that

way, recognised them as *tilapia* but neither he nor anyone else has been able to explain how, by some piscatorial Kon-Tiki Expedition, they had succeeded in crossing the Indian Ocean. But it was a god-sent gift, because the *tilapia* is a most accommodating fish; it can breed and grow in almost any conditions —salt or brackish water, running water or standing water. Moreover, it is a mouthbreeder, that is, it protects its spawn from harm during incubation and its fingerlings from marauders by carrying them in its mouth. It is also a tasty fish for human consumption.

Stocks were bred from these first specimens and they proved so successful that the Japanese shrewdly turned them into political-warfare during their occupation of Indonesia by pretending that they had introduced them and by spreading them throughout Java. Their cultivation was therefore far advanced when the war came to an end and had been adapted to that ingenious method of fish-farming which the Javanese peasants employ—growing fish in the flooded paddy-fields with the rice. They breed fish in nursery-ponds and then transplant the fingerlings when the rice-terraces are first flooded and collect the fish when the terraces are drained, for the rice-ripening. In those three months they get fish about the size of large sardines or pilchards, which is about the size which Javanese people enjoy.

Prince Kosol, however, assured me that the Thais like their fish to be more substantial than that and that was one of the reasons why they preferred ponds, where the fish could go on growing throughout the year until they reached a suitable size. In 1952, however, they started growing rice and fish simultaneously but adapt'd the Javanese technique by having, in the centre of the ricefield, a sump, or pond. When the fields were flooded, for the rice-growing, the fish frolicked in the underwater rice-jungle but when the water was slowly drained off they migrated to the deeper water of the sump and remained there until the fields were again flooded. This could be repeated as often as desired, until the fish-steers became fish fat-stock.

In 1950, 200 specimens of *tilapia* from Indonesia were introduced into Thailand for breeding purposes. By the end of 1951 there were 10,000 at the Bangken Fisheries Station

and by the end of 1952, 100,000 *tilapia* fingerlings were available for distribution.

Pond and field fish-culture are important factors in the much wider plans for increasing the supplies of this desperately needed higher protein. The Food and Agriculture Organisation is applying itself to this not only in Asia but in the Middle East and in the Caribbean and Latin-American countries where the food shortages are most severe. The advice and help is extended to the countries who are developing their deep-sea and coastal fisheries. That means improvement in the techniques of trawling and the raising of the abysmally low social and economic status of the fishermen. By introducing experts from various parts of the world, including those parts, like China, Japan and Java where fish-culture has been a high-art for centuries, they are encouraging the development of brackish water fishing. This is a device by which coastal swamps are converted into fish farms by making *bunds* to keep back the sea and keep in the fish, which are trapped by the simple device of opening the sluice-gates and letting in the sea and the fish and then keeping them. One of the most useful brackish water fish farmed in this way are the milkfish. Swamp fish-culture has much to recommend it because it involves little interference of the balance of nature, the ecology remains fairly consistent. Other big and much-needed programmes includes the development of shell-fish culture in which the region is potentially very rich but which has been neglected.

The handling and processing of fish in hot climates where germs and decay flourish so rapidly are matters of some concern. All this has to be done on the cheap and there are limitations to refrigeration, transportation and canning which increase the cost. Local methods includes drying ('Bombay duck') and the making of fish-pastes and fish essences. My first acquaintance with these latter was an olfactory outrage. Even the memory gives me a feeling of nausea. It was on one of the floating-markets in the network of canals of Bangkok. These canals, or *klongs*, intersect the city and provide the avenues for the countless boats which come to the capital by river and the domestic sites for 300,000 people who live in the boats.

The klongs are pretty noisome. Hundreds of conflicting smells affront the nose, including the smell of canal water, which runs thick with refuse but still serves as the drinking, washing and cooking water of the canal-dwellers. But the most outrageous smell of all was from the jars of fish fermenting into fish-paste and, in some cases, into fish-essence, or *nam-pla*. How anyone could swallow such rotting horror and live, beat me. Yet later I found that in my travels I had been having *nam-pla* and enjoying it—because as an extracted essence it is used in condiment-proportions sprinkled over rice. Some nutrition experts who shared my revulsion at the smell of the processing and thought it ought to be discouraged, changed their minds when they had it analysed and found that it was especially rich in Vitamin B.12 and a life-saver for rice-eaters living on a nutritional knife-edge. Which is just another reminder of the injunction I keep on repeating, 'Know what you are changing before you try to change it.'

And now we come to that expedition which Schwab attributed to my childish ambition to ride through a jungle on an elephant (We had not had a chance thus far). If I had known what I now know I should have retorted 'Speak for yourself!' because I have a photograph which Eric had taken of himself standing shooting pictures from the back of an elephant and on it he has written 'Your photog iipher at the height of his ambition.'

Ride on elephants we did—into the teak jungle, to see the methods of forest management which the conservators of the Royal Thai Forests are developing with advice and help (and reciprocal experience) from FAO. These forests on the watersheds of the great rivers have been ravaged in the past. Teak, next to rice is the richest export of Thailand, and free commerce has robbed the forests of their greatest giants until now the Government has taken over the concessions and is applying its own safeguards. Another serious factor was the shifting cultivation employed by the jungle-peasants. This, like the process I described in dealing with Borneo, consists of hacking and burning the forest to provide a clearing and the ash and charcoal for one or perhaps two seasons' crops before the jungle-gypsies move on and repeat

the destruction. For destruction it is with repercussions which spread thousands of miles away from the scene of the operations.

The looting of the teak-forests by indiscriminate lumbering and the shifting cultivation stripped whole tracts of these mountains of protection against the monsoon rains which scoured the soil into rivers, choked them with silt, raised the river-beds and led to the floods which year after year afflict the lower reaches. The lives and livelihoods of millions are affected not only by the direct effects but by the loss of food through the drowning and smothering of their fields and the famine and disease which follow in the tracks of oriental floods.

The story of erosion through forest mismanagement is not confined to Thailand or the East; it is a story of havoc in every part of the world but it is aggravated by the heat and torrential rain of the tropics which hasten the process.

Included in our escort into the jungle were Nai Khan Chaiyen, Too-Too, Boon Tam and Chan. Nai Khan Chaiyen means 'The Little-Pitcher-Who-Never-Gets-Excited', an appropriate name for a plucky twelve-year-old boy who fetches and carries water through the dangerous jungle. Too-Too was a little yellow wire-haired terrier, Boon Tam, was the giant tusker, leader of the logging elephants, and Chan was the Thai forester.

As we thrust our way through the pathless jungle it was tiny Too-Too who took the lead and mighty Boon Tan who followed. The elephant would never move unless Too-Too was ahead. And for the very good reason that the elephant feared King Cobra and Too-Too, the snake dog did not. In fact he seemed to take an unholy delight in teasing his elephant friend. He would scurry on ahead and stop dead; so would Boon Tam; he would sniff or bark at a dangling vine and the elephant would swerve and give it a wide berth; or he would get his eye on something slithering through the undergrowth and Chan would release the safety catch on his revolver. At one point, however, even Too-Too was alarmed; a black, furry looking reptile was wriggling across the path and the dog daring sniffed it; he yelped and rubbed his nose in the grass. It was covered in ants. The reptile was in fact a huge worm which

had been captured by an army of ants and was being carried off. It was still alive and every now and then would give a wriggle and the dense swarm of ants which covered it would be swung about but they never let go.

With us, also, went the teak-fellers with their saws and axes and a tribe of jungle peasants and their women-folk with their curved, razor-sharp knives for lopping the bamboo and undergrowth.

Chan had a science degree in forestry and in addition he was a jungle-tracker who could find his way through that dank, green darkness with unerring instinct. He had three jobs to do on this trip with us—one was to select trees for future felling; the other, to allocate to the peasants their strip of jungle for that year's cultivation, and the third to superintend the logging operations.

In the depth of the forest, he carefully chose a tree, The lumbermen with slashing axes cut a girdle—a deep gash—round the trunk about two feet from the ground, slicing through the bark and the cambium, through which pass the food-vessels from the roots and leaves. This girdling, in fact, amounts to cutting the tree's throat. In this state it is left standing for two years to die and to dry off so that it seasons while it is still unfelled and when it is cut down the log of this heavy wood will be light enough to float down the river. That is how it gets to market in Bangkok by floating downstream on a journey which may take anything from two to six years.

Chan's selection was demonstrating how foolish and criminal the old practices were because by choosing suitable trees and thinning the forest teak can still be got in quantity without destroying the forest cover.

So too with shifting cultivation. Here again what in folly is destructive, in wisdom becomes beneficial. The peasants are no longer allowed to go around burning haphazardly. Chan and his colleagues direct them into prearranged tracts where they have already removed the valuable timber but leave the less valuable to the peasants for cutting and for their own purposes. Then they can burn the bamboo and the under-growth. They are given cultivation rights of this clearing for a year. And there they plant their rice and their peppers and their vegetables and the cotton and their water-melons. But they

are also paid by the Government to plant teak saplings, supplied from the forest nurseries. At the end of the year when they have harvested their crops, they leave behind them a young plantation of teak. Then under guidance, they move on again. In this way, jungle farming which has been a cause of erosion has become a check on erosion by creating new forests for generations to come.

Chan was able to show how in places where the jungle had been stripped away, the rain was flushing off the soil like a hose scouring mud off a doorstep but where the forest had been conserved and replanted, the rain was caught by the vegetation as by a sponge and would seep down into the soil and the underground springs.

In another part of the forest, we were able to see what would happen to the trees he had just had girdled and what would happen—a hundred and fifty years hence—to the saplings we had just seen planted. A giant teak-tree, dead these two years, was attacked with axes and saws by the lumbermen, while the Little-Pitcher-Who-Never-Gets-Excited disappeared periodically to fetch water for this thirsty job, and Too-Too kept annoying Boon Tam by discovering imaginary snakes. In half an hour that giant tree came crashing down; in another half-hour it had been stripped of its branches and had become a log three cubic metres in size. Its value on the jungle site would be about 2,400 bahts or £45, or \$120, but when it reached Bangkok years later it would be worth at least twice as much, and when it got to the furniture makers in Europe and America it would be worth four or five times as much. But maybe this one would never reach Bangkok because it would face many vicissitudes on the way—the principal being the teak-pirates or teak-rustlers or whatever one can call them who lie in wait for it as it comes over the rapids or drifts along in the mighty rafts. They sneak out into the river, capture a few teak trees and carry them off to jungle sawmills. Now the foresters are using aircraft to keep an eye on these hi-jackers.

The United Nations through the Economic Commission for Asia and the Far East (ECAFE) is helping with the flood-control schemes of this region, and the Thai Government has plans, assisted by the International Bank, for a big dam to harness the floods. But bitter experience elsewhere in the

world has shown that unless the engineers have the co-operation of the foresters like Chan and the backing of their work in maintaining the forest cover, the great enterprise will be wasted. Expensive dams will merely load up silt.

In fact, the doctors, the fish-farmers and the foresters whom we have discussed in this chapter are inseparable partners. That was what was impressed on us more and more as we continued our journey—that experts working in isolation are a menace and that technical development must be a concerted enterprise.

CHAPTER FOUR

Ma Tin Tin Yee

BURMA

A SIMPLE, but necessary, rule for missions such as ours is 'Get out of capital cities quickly'. This might seem ungracious, and ungrateful to those Ministers who expected us to observe protocol and present our credentials: to the respective Embassies which were cordial (if curious); to those who were anxious to be sociable and to lay on parties; to radio-stations, which wanted (and got) broadcasts; to the local UN officials, so assiduously helpful, and to the civil servants who had prepared such abundant hand-outs and who were prepared to explain, for hours if need be, what they were *going* to do.

Our time was short and our itinerary long. Our interest was in the field and not at H.Q. Our concern was with flesh and blood and not with paper-plans. And, anyway, our morale, as a team, suffered in the cities. Eric became volubly impatient. Herb fretted and I, according to Eric, 'retreated to the Highlands of my Scottish isolation', by which he probably meant that I brooded and sulked.

Eric protested that he had not come to S.E. Asia to photograph filing cabinets and 'stuffed-shirts'. Herb resented those who wanted their voices recorded for posterity. The film cameramen writhed when local notabilities fancied they were film-stars. We had a private code for such circumstances. It was 'C.D.' (Corps Diplomatique) meaning that we had to be tactful. Whenever I saw the spark in Eric's eye, the flint-and-timber of an impending flare-up, I would murmur 'C.D., Eric! C.D.' and he would meekly select a camera and click. Since his sitter was not to know that there was no film in that particular one, everybody was happy. Similarly, with the film-cameramen; the whirr of the camera was all that was needed. Herb was not so lucky, because his subjects usually wanted their voices played back, but it was a simple job to demagnetise the tapes and

'scrub-out' the unwanted voices. Incidentally, I discovered (but never mentioned) that Eric had his own version of 'C.D.' which he applied to me. If he used his favourite camera on a subject, I knew he was in earnest; if he used another type of camera, when I asked him to take something, I knew he was just humouring the *chef de mission*. One was a 'study' and the other a 'snapshot'. It suited me because I wanted a photographic 'running commentary', a camera short-hand note, and the fact that so many of the 'snapshots' turned out to be superb 'studies' is a consolation and a compliment to Eric.

The rule about getting out of the capital quickly broke down in Burma because our main subjects—tuberculosis and mother and child health—were centred on Rangoon and because the Government were in some real difficulty about getting us into the hinterland. Our visit coincided with an unfortunate incident in which some foreign personnel (not UN) had been found trafficking with the Chiang Kai Tchek guerilla army which had retreated into the Shan States in Burma. The Government had politely accepted the official disclaimers but had restricted the movements of foreign experts. Furthermore, the Karen rebels and the White Flag and Red Flag Communists were active in large parts of the countryside. When Eric went ten miles down the Irrawaddy to photograph a scheme for reviving village pottery (sponsored by UN Technical Assistance through I.I.O.) he had to have a gunboat as an escort and a platoon of soldiers to protect him.

One can, therefore, understand not only the perplexity but the frank suspicion with which the Burman War Ministry received a request for military permits to allow five high-sounding United Nations officials to go to Mandalay to look at a milk-shed. The more we flourished our imposing documents (engrossed in English, French, Spanish, Russian and Chinese) and invoked the names of the Secretary-General and four Directors-General, the more 'phoney' the pretext must have seemed. Why should anyone have travelled all these thousands of miles to see how the Burmans of Mandalay made condensed milk? It took a lot of explaining and days of delay, for there was no question of slipping away quietly. The railway was still beset by bandits and the roads a succession of ambushes. The only way was by air, with a descent into the comparatively

safe 'pocket' of Mandalay itself. So we were in the hands of the War Department.

In the meantime, we had plenty to do in Rangoon itself. The tragic problems which the Burmese had asked UN help in tackling could be personified in the story of Ma Tin Tin Yee.

Ma Tin Tin Yee, with her flowered sarong and smart blouse, could walk into the best hotel in Rangoon and attract attention by her delicate beauty and her simple elegance. No one would have detected in her the home, or hovel, from which she came. Ba Aung, her husband, called her 'Lamp of Life', but it was not life, but death which made her beauty incandescent, which glowed in her transparent face and fired her lustrous dark eyes. The lamp was lit by the flame of tuberculosis.

She was only 22 years of age. Ba Aung, her husband, was a civil service clerk, educated and able. Her boy, Tin May Aung, was two years of age. Their home was a bamboo shack, with a sleeping porch, an open living-room and a so-called kitchen no bigger than a bicycle shed. It was semi-detached and separated from their neighbours by a wicker partition. On the common verandah, a few feet from Ma Tin Tin Yee and her cough, their neighbour, the baker, milled his flour, kneaded his dough and fired his bread. His bakehouse was also a home for himself and a wife and family. To get to this rickety hovel, the families and the baker's customers had to walk a plank across the open sewer. For this squalor, Ba Aung paid an exorbitantly high proportion of his civil service salary.

Such conditions were commonplace in Rangoon. They were even worse in the riverside slums. Even the sidewalks of the wide avenues of the business and shopping quarters were cluttered with thatch and wattle booths rigged up indiscriminately to house the thousands of refugees who had piled into the city from the country districts then beset with civil disturbance. Added to these incursions was the already existing shortage due to the destruction of buildings and living accommodation. For Rangoon was a city of ruins, victim of destruction —by both sides—in a war which had turned Burma into a battlefield. Above all this the fabulous Shwedagon, the Golden Pagoda, its vast cupola sheathed in tiles of solid gold metal, looked like the diadem of a queen robed in rags.

The case of Ma Tin Tin Yee was typical of thousands of tuberculous sufferers in Rangoon, victims of overcrowding and malnutrition (for food was prohibitively expensive) and of conditions which spread the contagion. The Government had been conscious and concerned about the apparent extent of tuberculosis and had asked the World Health Organisation and UNICEF to help in checking its spread. They wanted something more than a B.C.G. campaign—the method of mass-inoculation which can do something to protect those who have not been exposed to the infection but nothing for those who have. The UN agencies therefore co-operated with the Government in setting up a clinic in Rangoon for the diagnosis and treatment of the disease and for the training of medical staff. This clinic was equipped by the Children's Fund and staffed by the World Health Organisation with an international team, including radiologists, clinical tutors, a medical statistician and X-ray technicians. The head of the team was Dr. Papamicolaou, a Greek with impressive achievements to his credit in his own country.

When the clinic was opened, people thronged to it. There had been broadcasts and newspaper announcements and, with that characteristic matter-of-factness of the Burmans, they went along to be checked. Between 200 and 300 attended each day.

Among them was Ma Tin Tin Yee. She joined that crowd clustering round the busy reception clerks, pacing the verandah or squatting in the sun—saffron-robed monks, policemen in uniform, rickshaw men, business men, schoolchildren and housewives like herself. It seemed that over 80 per cent of the population of Rangoon was 't.b.-positive'. That did not mean that four out of five were active consumptives like Ma Tin Tin Yee, but it meant that that proportion had been infected in some degree and that vaccination with B.C.G. ('Bacillus Calmette-Guerin, a mild, active strain of tubercle-bacillus which may help to produce an immunity) could only be of value for the remaining 20 per cent, the 't.b.-negatives'.

Ma Tin Tin Yee was an advanced case of tuberculosis. She should have been sent straight to hospital, but that was out of question. There was no hospital to which to send her nor the thousands like her. Even if the buildings had existed, which

they did not, hospital 'beds' do not simply mean the cots on which patients lie; they mean crews of doctors, nurses and orderlies; and these did not exist either. As U Bat Sein, speaking as Permanent Secretary of both the Ministry of Health and the Ministry of Education, and in that dual capacity having both to fight disease and produce the doctors and nurses for the task, said to me, 'We need thousands of doctors and thousands of nurses. Our present medical training facilities cannot yet produce them in anything like the numbers required. We will need five years to produce our first output of doctors from Burmese medical schools.'

In the case of tuberculosis, the best that could be done even with the help and resources of the UN, was to give specialised training to a number of existing doctors and nurses and to teach auxiliaries. For that they had all the advantages of a well-equipped clinic, with X-ray facilities, operating theatre and pathological laboratories. But the technical services which are so completely taken for granted in Western hospitals are an innovation in Burma. As the Dutch X-ray technician in the team explained to me, Burmese education, although it claims the highest proportion of literates in Asia, is traditionally temple-teaching (although the classes, as in Thailand, have been taken away from the monks) and this is not an effective groundwork for electrical or mechanical vocations. The Burmese have a real aptitude for hand-skills but an X-ray apparatus is not a child's toy. The best possibility was to find an industrial or commercial electrician and to teach him but they were scarce. The alternative was to put someone through a complete apprenticeship—a long job.

There were exceptional nurses, like Mrs. Hindle, the Burmese sister-tutor at the clinic, but it meant that they had to do not only the work of the clinic but domiciliary visiting as well. And home-nursing, when there are no hospitals, is an exacting business.

Ma Tin Tin Yee became one of Mrs. Hindle's personal patients. With the public-health nurse, the sister-tutor made her regular calls, with the mobile clinic attached to the team, at the hovel. The best they could do was to impress upon Ma Tin Tin Yee, her husband, the child and the neighbours the risks and precautions which were necessary. They prescribed

food and rest without much hope of their advice being observed and they arranged for Ma Tin Tin Yee to attend regularly at the clinic for treatment.

She was a good patient. She took an intelligent interest in the progress of her own case and became an 'exhibit' for the doctors and nurses studying the X-ray plates. One lung was seriously affected and she had it collapsed and turned up regularly for the 'refills' of the inert gas which kept the lung inactive and gave it a chance to heal. And after her treatment she would go back to her mat-bed on the front porch and listen to the friendly chatter of the baker and his wife as they made their bread a few feet away.

The odds against Ma Tin Tin Yee recovering in such circumstances were enormous but her case illustrates the commitments which a Government undertakes when it invites in UN help. It is not just a case of 'calling in the doctor'. The WHO teams are not supposed to give treatment at all (I have still in all my travels to find an international doctor or nurse who, faced with suffering humanity, abides by that principle). Their job is to teach the nationals to give the treatment and create the cadre of experts who can, in turn, train other nationals and expand the services. But there is this other thing, of which the tuberculosis project in Rangoon is an example: UN intervention can reveal the true extent of a disease, in proportions far beyond what was suspected and making far greater demands on the resources of a country than its Government could have contemplated. And once the lid is lifted the facts cannot be ignored. The Government of Burma is now confronted by an imperative challenge which is not only medical but social. It cannot just jab people with a needle and say, 'Look what we are doing about tuberculosis'. They have to extend educational facilities to provide the intake of nurses and doctors to the medical schools which they will also have to extend. They have to build more clinics and more hospitals and more sanatoria. And they have to build houses to get rid of the tuberculous conditions which we saw, not only in the case of Ma Tin Tin Yee, but in innumerable homes where people were sleeping five and six in a bed and where sleep was just a prelude to sickness and death.

And tuberculosis is only part of the story. With even wider

implications are the Mother and Child Health Services, from which the Government asked for assistance on the World Health Organisation in setting up clinics in Rangoon and throughout the country. The moving force behind this was Daw Khin Kyi (pronounced Dawkinchee) about whom I had been warned.

'Warned' was the right word, because Daw Khin Kyi had a flashing smile, a disarming chuckle and a charm calculated to win any argument. That was why I found myself being eaten alive by nocturnal insects in a tropical garden, watching a play or rather a revue of which I did not understand a word. We had been out before dawn and had laboured all day in sweltering heat, without respite or even a meal, working to a schedule which Daw Khin Khi had herself imposed on us. And then she had said 'You will come to my party'. I had argued lamely but she had only smiled, and, before I could 'C.D.' Eric, she had smiled at him too and it was not necessary. And Herb had said he could not imagine anything nicer.

It was graduation day for her student nurses. They had qualified for their arduous and courageous job of going out into the country, to the villages of the Irrawaddy Delta and up into the Hill States. And this was their send-off. Daw Khin Kyi was staging a party for them and they were staging this play for her.

They were her pride and joy. They were girls she had selected from the countryside and had brought to Rangoon to train, because city-bred girls would not take well to the life in the villages where nurses were desperately needed.

She knew how to value them because she had been a nurse, before she became the Mrs. Roosevelt of Burma. Indeed, it was as a nurse that she had met Aung San, as a patient. Aung San was the great Burmese patriot. The Japanese had accepted him as the leader of the Burmese Army but in 1945 he had joined forces with the allies in expelling the Japanese. He became the 'strong man' of the Burmese independence movement and signed the treaty in 1947 in London which might have kept Burma within the British Commonwealth, but the terms were resented by the organised opposition in Burma and it was he who announced that Burma would leave the Commonwealth.



NEW RICE: Scientists, at the International Rice Research Station in Orissa, work in the wet fields hybridising rice to produce strains with better yields.

NEW LIFE: Learning is avidly sought. Schools are being improvised out of old religious buildings and even out of animal sheds but classes invariably overflow into the open.



NEW LIFE: A family of refugees finds a new home in the land recovered from the malaria jungle.



TAKE TIME IN IN INDIA CITY. THIS IS TYPICAL OF CONDITIONS THOROUGHOUT S.E. ASIA.
THE SACRED COW OBSTRUCTS MODERN PROGRESS.

8



Nevertheless, a gang of gunmen entered the Executive Council Chambers in Rangoon and assassinated him. The Burmese have been called—and there is something in the analogy—‘The Irish of Asia’ and Aung San was certainly the Michael Collins, who, too, was assassinated for signing a freedom treaty with the British.

As ‘Madame Aung San’ she would have had an assured place in the affections of the Burmese people but she established her own. In that country of emancipated women, she retained her maiden name Daw Khin Kyi. She became her country’s delegate to the World Health Organisation Assembly but eschewed politics and became instead Director of the Mother and Child Welfare Department.

Her biggest problem was to find the personnel for all her schemes throughout the country and she had initiated the training scheme of which the twelve girls who had graduated were the first products.

Their idea of a celebration was to put on a play, or a series of sketches, in the spirit of a college ‘rag’, with songs and dancing, to illustrate a student’s life and why they were going in for nursing. They did it with great verve and slapstick, punctuated by coughing and spluttering as they swallowed mouthfuls of the insects attracted by the stage-lighting. It obviously went down well, A stout figure under a banyan tree was laughing uproariously and applauding vigorously. It was the Permanent Secretary U Bat Sein.

‘This is the answer to our problem,’ he shouted to me. ‘We’ll send this show round the countryside and the people will love it, the nursing recruits will roll in.’

Daw Khin Kyi, however, had other methods. She got the wives of Cabinet Ministers to appear at women’s meetings. Most of them had been nurses, doctors or professional women—a pretty blatant way of telling girls that if they take up nursing they would be pretty sure of a good match.

‘But,’ I protested, ‘if it brings girls into the nursing profession merely as an excuse for getting married, and they succeed, is not your training going to be wasted?’

She smiled pityingly at this example of male logic.

‘No training of women is ever wasted in our country,’ she said. ‘When a w’ man sets up a home, she does not cast

away her experience. Even if she makes a modest match, the nurse is always the "good neighbour". Her skill is a permanent part of the community. And when a woman marries she does not give up her career. There are more women doctors than men doctors in Burma. Our leading lawyer is a woman. . . ." And she quoted a whole list, pointing out that women were responsible for organising and running most of the social institutions in Burma.

That is what makes Burma exceptional in South-East Asia, women from time immemorial have had equality with men. At one time, it would seem, it amounted to polyandry in which the women went in for polygamy. Marriage is an equal contract and is civil and not religious. Divorce is by common consent and in the event all property is shared equally between husbands and wives. Most of the trading is done by women and in the case of the bazaars, the housekeeping is often done by the men.

There was nothing surprising or novel therefore in the emphasis which was laid in all our discussions on the part which women had to play. And particularly in medicine and education.

The plans for medical development included the production of short-term medical auxiliaries. They were to provide a two-years public health course and training in the treatment of a few listed diseases and to equip men and women to go out into rural areas where medical services were practically non-existent. There 'health circles' would be manned by a health assistant and a public health nurse, under periodic supervision of visiting doctors and public health officers. On the curative side, there were plans for a national hospital, base-hospital, regional hospitals, district hospitals and rural health-clinics.

But the plans depended on how quickly the shortage of medical men and women could be redressed. Burma was producing about 200 nurses and midwives, but they were being city-trained and the problem (which Daw Khin Kyi's methods were trying to meet) was how to ensure that they would in fact go and settle in the villages.

All this was tied up with mass-education. Aung Min,

Secretary of the Mass-Education Council, assured me that even in the unsettled state of the countryside, Government mass-education organisers were spreading through the villages and were well regarded even in the areas of disaffection. A village was selected as the centre of a district and personnel was chosen for qualities of leadership. They received six months' training in which the main emphasis was on health, then agriculture, home-crafts, rural industries, co-operatives, technics and adult education. They were chosen from the villages and returned to the villages where the organiser's house becomes the model home, as an example to others to improve theirs by cleanliness and sanitation. The organisers were expected to submerge themselves entirely in the life of the villages and to work with the priests, who usually took the initiative in starting the social centres often in the monasteries.

At the request of the Burmese Government, Unesco sent Dr. Tisinger and Prof. Hernandez to study the educational problem of Burma. Their report was disquieting. Although Burma claims the highest percentage of literates in Asia, the content of literacy is pretty poor and to improve it and modernise it more and more teachers are needed. They found 13,000 teachers in a country which needed a minimum of 45,000. Apart from filling that gap the existing teachers' training colleges were producing only a fifth of the replacements required so that the situation was in fact deteriorating. The Government had plans for adopting, or, perhaps, adapting the mission's recommendations. As, indeed, it must.

Yet while it was looking for administrators, teachers, technicians for new industries, agronomists, finance and economic experts and managers, the emphasis was on the medical aspects and particularly on mother and child health.

And this was certainly an urgent problem—as we found going round the clinics. These were being organised with the help of a UN equipment and a team of nursing-tutors under the direction of Dr. McPhail, a Canadian paediatrician. Our visits to these centres were among the most harrowing of our whole journey.

In spite of the modern equipment, the posters, the weighing-machines, the dispensaries and the immaculate, international

and Burmese nurses, the impression was as soul-searing as a mediaeval lazar-house. The clinics were crowded and spilling over with pathetic humanity. Mothers so emaciated and sickly that infants sucked in vain at their breasts and wailed piteously. All the children wailed. If they were not little skeletons, through starvation, they were covered with sores and suffering from miserable diseases. The nurses worked in relays, smearing, bandaging, injecting and dispensing.

And the 'medicine' which was most needed and most in demand was milk. UNICEF had provided dried milk as it had done for millions of mothers and children throughout the world. Since the days of Belsen and the liberation of the victims of the concentration camps, milk had been the salvation of the hungry. It had been shown that those who were starving at famine level could not eat or benefit from solid food—and indeed were liable to die of it—but milk could restore them. At the end of the war, there had been vast stores of dried milk, which had been diverted first to UNRRA, for emergency relief work, and then to UNICEF at a nominal cost per lb. But U.S. generosity and UNICEF supplies were not unlimited. By 1952, reserves were diminishing to vanishing point and the market-price of commercial supplies was getting beyond the financial resources of the Children's Fund. Governments must look for their own sources of supply. UNICEF in its great humanitarian mission had shown what milk could do, had created a demand for it in countries where milk was virtually unknown after weaning, and had made it the basis of mother and child services. For there could be no doubt that women came in the first instance to clinics (not only in Burma but all over S.E. Asia and the impoverished countries of the world) seeking milk for their infants.

The demand had been created and the need was there—heaven knows, the need was there!

A woman—no, a girl who looked like a middle-aged woman was sitting in a corner of one of the Rangoon clinics. She was holding a tiny scrap of a baby. It was not crying. She was rocking it in her arms, talking to it and, every now and then, holding it to her pathetic, sagging breast and trying to coax it to suck the milk that was not there. It came to her turn. She went over to Dr. McPhail and stretched out her baby to

him. He took it and turned, wearily, to the Burmese nurse beside him. 'Tell her,' he said gently, 'that her baby is dead.'

Dead for lack of milk. Starved because its mother was starved. And milk could have saved it.

That was why we had to go to Mandalay. That was why it was so difficult to explain to an official sitting at a desk in the War Department why five UN officials wanted to be flown to see a milk-shed.

It was Mr. Wong who suggested it. We had been discussing with Mr. John Barnabas, the Indian head of the UNICEF mission in Burma, this desperate problem—after UNICEF milk, what? And Mr. Wong, a Canadian-Japanese, who was a UN Technical Assistance expert, who was in Burma to advise on the development of rural industries, the revival of crafts and the creation of peasant co-operatives, mentioned the condensed milk industry of Mandalay.

Most of the cattle in Burma are draught animals, bullocks and oxen, but around Mandalay there had once been the elements of a substantial dairy industry. The Japanese, however, had commandeered and killed off the herds. After the war, and despite the civil strife still prevailing, attempts had been made to revive the dairy-industry and with it the production of condensed milk. But the dairying had remained small because the peasants, whose land-work depended on draught animals, had been restoring those before thinking about milch-cows.

He gave us an extraordinary account of the condensed milk 'industry' and that, and the serious schemes he had initiated, persuaded us, and John Barnabas, to go along with him to Mandalay. And after we had convinced the War Department that (a) we were not subversive agents and (b) our request was not entirely frivolous we flew to Mandalay.

We were met at the airport by the owner of a condensed milk factory, resplendent in a colourful Burmese costume—turban, a tight-fitting short silk jacket and a flowered silk skirt, bunched in front, Burmese fashion, like a bustle the wrong way round. He was most cordial and anxious to show us his 'plant'.

We drove through Mandalay, the Buddhist holy city,

with its 450 pagodas, and its seminaries of higher religious teaching, once the capital of the Burmese kings and now badly scarred with the havoc of the Second World War. On the outskirts, up a dirt road, we stopped. Our host signed to us to get out, although we looked in vain for his factory.

He took us into a yard in which there was a wooden shack, under the verandah of which was an array of six old, enamelled, domestic baths. This was his factory.

Into the yard came farmers on bicycles. They had cycled 10 or 20 miles with milk, in open oil tins, slung pannier-fashion across their rear mudguards. To keep the milk from slopping out, they had put in leaves, caterpillars and all, torn from trees. As I watched one bend to take off the milk-cans, I saw a good two inches of ash from his cheroot fall into the milk. He put in his dirty hand and scooped out as much as he could and shook the can to submerge the rest.

Attendants took the cans from them and dipped in a lactometer (an instrument of which the factory owner was inordinately proud as a piece of modern equipment) and measured the amount of water which had been added on the way and which was discounted, with vituperative argument, when the farmers were paid.

The tins were then decanted into the baths through a muslin sheet of dubious colour. This was the only pretence at hygiene I saw in any of the operations. At least, it strained out the leaves and the caterpillars and some of the cigar ash! And when the baths had been filled, the owner shouted and out of the dim recesses of the shack, or shacks, at the back of the verandah emerged his women workers, abandoning their family chores. And they began to pile logs and stoke up the fires under the baths.

This done, they seated themselves on high stools alongside the baths and, with oars, began sculling the milk as it heated and as the sugar was measured into it. They continued to row without pause until the evaporation had reduced the milk to a certain consistency which they could judge by the drag on the oar.

Then they stopped. That was condensed milk!

Meanwhile all the birds in the neighbourhood had been around. The sweetened milk had attracted the insects. A

particularly mangy dog, his skin inflamed to the colour of a flamingo, had put his raddled paws and ulcered mouth on the edge of one of the baths and had been chased away. A child had slipped out of one of the shacks to scoop out a 'lick'.

The milk was then transferred to another bath which had lost most of its enamel and had obviously been pensioned off as a boiling pan. I had seen it hosed out with cold water. When the milk was cold, it was ladled out into two-gallon tins conspicuously marked 'Burmah Oil Company' and shipped off for sale in the cafés.

The owner was most forthcoming. The women, he told us, worked from eleven in the morning until six in the evening for one rupee eight annas—less than two shillings a day. The factory condensed about 72 gallons a day—the milk of 288 cows. The yield was understandably low—a quart per cow compared with the average British yield which is two gallons—because it was from draught animals. Moreover, the general supplies were low because milk for calves, being bred for the plough, would always have priority over milk for sale.

After watching this performance, John Barnabas decided that Mandalay milk even with its obviously high content of animal and insect protein could never be a substitute for dried milk. But Mr. Wong was most persuasive. He had shown us the 'Before' so that he could excite us with the 'After'.

All this horror would disappear under his arrangements. He had already got all the condensed milk manufacturers (including our friend with the 'stomach-bustle') to agree to set up a processed milk co-operative. The moving spirit was a young farmer, obviously very enterprising and intelligent, who hoped we would support his application for a UN fellowship to go to Europe and America to study the best techniques. Wong had got the agreement of U.S. Mutual Aid authorities to his proposition to build a model condensed milk factory in the grounds of the Agricultural College. It was to have the latest hygienic, vacuum-plant equipment and was to be run mutually by the manufacturers as a producers' co-operative.

In addition to that the UN Food and Agriculture Organisation had secured the support of the Burmese farmers in the district for an ambitious programme of breeding disease-free

milch cows from a pedigree herd. This, again, was to be sponsored by the Mandalay Agricultural College. There was no doubt that this region had real possibilities of becoming a considerable dairy-farming and cattle-raising area. And it might be, as far as Burma was concerned, the answer to that dreadful problem of providing milk for the starving.

CHAPTER FIVE

Fatima

EAST BENGAL

THREE babies are born every minute in East Pakistan. And every ninety seconds one of them dies. Whichever way one looks at it, that is wrong. So many babies should not be born and those that are should not be allowed to die. It is a denial of human reason and human sympathy. And it is the more outrageous when one sees it at first-hand.

We went to a Moslem refugee camp near Dacca, the capital of East Pakistan. It was grim enough to see the condition of these victims of communal upheaval, of that ruthless process by which Moslems and Hindus were uprooted and, with the death of millions, transferred from one side of a frontier to another, but it was even more grim to go into the maternity ward of the improvised hospital.

There were six mothers there and five of them died— including Fatima. ‘Fatima’ one recalls was the favourite daughter of the Prophet Mohammed and this girl—this child—had been called after her. She was lying wide-eyed and expressionless waiting for her baby—for the birth which would kill both her and it.

I asked the doctor how old she was. He went over and spoke to her and bent over her to hear her failing whisper.

‘She says, “Three babies”,’ he told me, ‘That is the nearest we get to their ages. That would make her, perhaps, sixteen or seventeen.’

Fatima died, worn out by child-bearing, at seventeen. Even so, she need not have died, nor the other four. Blood transfusions and modern drugs might have saved them, but the facilities, which are routine in Western hospitals nowadays, were not available. Indeed, I was told afterwards that I had given offence by suggesting a transfusion, not merely because of the reflection that there was no means of blood-grouping and

no stored blood or plasma, but because only the husband could have given it. Anyone else's blood would have been a violation. And even if he had been prepared to give it (which would be unlikely) it was a hundred to one that his blood would have been lethal with infection.

So, because she had had three babies, because she had anaemia due to malaria and malnutrition, and because modern science was not available, Fatima died and her baby died. If she had lived, she might have gone on producing more babies, and if her baby had lived, it would have married and produced more babies. There are two ruthless schools of thought, the one which say that girls like Fatima should go on having children because it is the 'will of God, and the other which says that it is just as well that she and her baby died because they would have put further strains on the world's food supplies.

The following day I went to a Roman Catholic orphanage. Here were the other communal victims—the parentless children of Hindus and Christian Indians. It was a delightful place, where the children were obviously happy—a sanctuary from the stark tragedy of their young lives. There the girls of twelve, thirteen and fourteen in the long white saris of puberty danced and sang and performed *lushai*, that agile, rhythmic skipping with bamboo poles.

As we watched them, I said to the American nun in charge: 'What careers do you train these girls for?'

She looked puzzled at first and then said, 'For marriage, of course. If we do not get them married by the age of fourteen, they may never get a husband. That girl there'—she pointed to a nice-looking girl—'she is sixteen. Until she was over fourteen she was ailing and missed her chance. Now she will be lucky if she gets some old widower.'

Every Sunday, prospective bridegrooms and their parents came down to that orphanage and the girls put on a mannequin parade, but it was they and not the dresses that were being selected. Or it might be done by correspondence—like the questionnaire I was shown by the nun; 'Name of girl. . . . Age. . . . Complexion. . . . Is she obedient? . . . Is she fit for hard work? . . . Has she full faith in the Roman Catholic Church? . . . Is she basic Catholic or convert? If converted what caste

did she belong to previously?' Obviously a Christian Indian choosing a child-wife from a mail-order catalogue!

When I expressed some surprise at a Christian institution encouraging child-marriage and 'blind-dates' for matrimony, the nun was quite reproachful and asked whether I expected them to go against the customs of the country. These girls matured much earlier than those 'back home' and she assured me that she was very careful in her choice of bridegrooms for them.

So the girls in this part of the world are not only encouraged but compelled by custom and circumstance to marry and have children as soon as possible.

As a result, three babies are born every minute and one dies every ninety seconds and the 43,000,000 people of East Pakistan live in poverty and hunger.

This fact was thrust upon us wherever we went in this part of the Ganges Delta. In the waterlogged fields we watched children catching minnows with nets as big as themselves. They were not playing truant from school, because they had no schools from which to play truant, and they were not catching minnows for fun but for the family dinner. Those minnows supplement diet which on the average consists of eighteen ounces of rice a day, salt, and chili peppers, and bananas.

Over 35 million of the people earn on an average about thirty shillings a month and live in huts of bamboo and thatch, with floors of hard-packed mud and cow-dung. Babies are born on those floors and the umbilical cord is cut with split bamboo and tied with raw jute. A five weeks' old baby, whose mother cannot satisfy him, has to have mashed bananas instead of infant food. By the time it is teething, it has an enlarged spleen from malaria. A quarter of the population of two-year-olds are doomed to die of kala-azar before they reach three and practically every child is loaded with hookworm.

Yet these are the people who produce the 'Golden Fibre' which is the wealth of Pakistan. On them, the jute-workers of Dundee depend for their pay-packets and the jute trusts for their dividends.

Having been brought up at the 'receiving end' and having seen slumps and unemployment bring poverty to the Scottish

partners of these jute-peasants, I had an intimate interest in all this. Four-fifths of the world's jute comes from East Bengal. Partition drew a line down the Delta, separating the jute fields of Pakistan from the jute mills of India. Strictest precautions were maintained to prevent jute-smuggling, and when Britain devalued the £ India followed suit with the rupee but Pakistan did not, so that there was severe discrimination against the Indian jute mills. Pakistan also set out to create her own jute mills but, in the meantime, Dundee got all the jute it wanted, and in 1951 one of the combines paid £750,000 in income tax to the British Exchequer, with corresponding dividends and useful pay-packets. I mention that figure because it was what Britain paid as its contribution to UN Technical Assistance for *the whole world* before it was lopped to £450,000.

The exports of jute gave Pakistan a favourable trading balance but that did not help its Eastern Province, which was hungry for rice.

On a food-pittance, grown-ups and children, when they are not prostrate with malaria, tuberculosis, kala-azar, elephantiasis or smallpox, labour from dawn to dusk in the flooded ricefields, tobacco-fields or jute-fields. And it is no job for invalids.

I watched the jute-retters standing waist-deep in the ponds, stripping the fibres. The long, slender jute stalks, no thicker than a man's finger, are soaked until they soften. Then they are gathered in bunches, doubled and beaten until the fibre is loosened on the stem. Then the fibre is peeled off, like removing a sock. It is back-breaking work and I found my own muscles aching in sympathy as I watched.

For these peasants, working on cash-crops, there is always the danger of famine. Their slender diet depends upon rice and, although the delta is a rice-growing area, it cannot grow enough for its dense population. The more jute, the less rice. West Pakistan, a thousand miles away across the land-mass of India, can export food—when the wheat-crop is good. But the Bengali-Pakistanis do not eat wheat. They depend upon Burma and Thailand and upon buying at world prices.

Since the Bengalis of East Pakistan are Moslems, they need have no scruples against meat-eating, but with only half an acre of cultivable land per head, humans are in competition with animals for direct sustenance. Cattle have been practically

ousted—not only beef-cattle but, to a serious extent, the draught animals which could share the muscle-burdens. Community grazings are practically non-existent because land-hunger and the extension of jute have swallowed them up. There are not enough fodder crops and such beasts as there are depend mainly on straw and they are starved, weak and stunted with rickets. They are battling, too, with rinderpest and even the poultry, which might have provided eggs and meat, have been reduced to a fraction by Newcastle Disease. The Government has set up vaccine-laboratories to deal with both but it is a long haul back.

While the population has been increasing, the land has been shrinking—a gradual shifting of the margin of land downward and downward. The agricultural holdings are undersized—an average of two and a half acres for a family of five. Moreover, in a cycle of five years the peasant cannot count on more than one good year. It is a case of too much water at the wrong time and often the wrong place. In the monsoon there are the heavy rains and the flooding rivers, but when the water recedes it recedes fast. The soil at one stage is waterlogged and often unfit for cultivation but it is also porous and does not retain the moisture. The natural flushing of the soil may give enough for one crop but eighty per cent of the country could be double-cropped by proper irrigation. That means pumping from the rivers and pumping means electric power.

Such a picture looks pretty desperate. Indeed, East Bengal depressed me more than any other part of our trip. I could well understand how some of the officials posted there from West Pakistan felt that they had been exiled and were serving a sentence. Even the language was different; theirs was Urdu and the millions of East Pakistan spoke Bengali; they were of different race, and only in religion had they anything in common.

Before Partition, the entire trade of East Bengal gravitated to Calcutta. So did administrative and cultural activities. When Calcutta was cut off, a new centre had to be created to become the capital of the province. At that time, Dacca had a population of 50,000; now it is half a million. The impression is still of an overgrown village.

And public works are desperately needed. The waterworks

which supplied pre-Partition Dacca was constructed in 1874 and we saw the original pumping plant still functioning. Water is taken from the river, chlorinated and mechanically filtered, and distributed to water-towers in this dead-flat area. The emergency plans included doubling the capacity of the water-works and changing it to electrical pumping capable of handling 4,000,000 gallons a day. Tube wells were being sunk to provide another 2,000,000 gallons a day. But they will need a great deal more than that if they are going to have an effective sewage system. Less than five per cent of the homes of Dacca have a flush-sewage system. The rest depend on primitive latrines. To the problems and dangers of the influx of population was added the exodus of the 'wet-sweepers', the casteless Hindus who were the scavengers and who, under communal stress, moved into West Bengal. It is not difficult to imagine the health-hazards of elementary or non-existent sanitation when the monsoon rains and the river floods come. We saw the new sewage system in process of development—storm-sewers fifteen and twenty feet in diameter. But the authorities cannot impose or enforce sanitary laws until the water and sewage services are completed.

Half the doctors and about four-fifths of the nurses and midwives left East Bengal for India. So the authorities have had to face the task of creating medical colleges and medical schools, nursing schools and training-centres for auxiliaries. This task is complicated by the fact that at Partition four out of five of the population were illiterate and ninety-nine per cent of the women were illiterate, so that to produce the intake for medical institutions they have to go back many stages and develop the whole system of primary and secondary schools. In all this they are counting on the help of the United Nations agencies and the Colombo Plan and on attracting foreign professors and teachers.

A grim picture! Yes, but not hopeless. It has already been possible to demonstrate what can be done. The Government, in combination with the World Health Organisation and UNICEF, completed an impressive malaria-control scheme in the Mymensingh region in the North near the borders of Assam and this has been extended to other parts of the country.

The same partnership tackled cholera in the Sunderbans, the tongues of silt-lands in the many-mouthed Ganges.

Malaria control in Mymensingh had a special significance not only for East Pakistan but for other malarial regions of the world. Whenever doctors go in to prevent diseases on a large scale, there are always those people who say, 'They are only saving lives from disease to let them die of famine'. More mouths to be fed and less food with which to feed them. But what that ignores is that disease-free people can produce more food for themselves. And that is what Mymensingh showed. Working with the doctors and nurses were agricultural teams under Mansur Ahmed, a Pakistan District Agricultural Officer. These teams kept records of the crops produced in the DDT-sprayed areas and the areas which were left unsprayed. (Always, in malaria-control demonstrations, an adjoining area is left temporarily untreated for purposes of scientific comparison.) The peasant-holdings in Mymensingh are very small—from a quarter of an acre to one and a half acres—but the team kept a complete check on each. The crops included rice, tobacco, potatoes, peppers and pulses.

In July and August, the land is prepared and the transplanting of *aman* rice takes place and the *aus* rice and jute are harvested. In December, the *aman* rice is harvested and the lands are ploughed for the planting of *aus* and jute. Those are the months when the incidence of malaria is highest in Mymensingh. And during those critical periods of the ploughing, transplanting and harvesting, three out of every five land-workers were once helpless from the fever.

But in the sprayed areas, in one year, the crops increased by fifteen per cent and in some cases by forty per cent. There had been no changes in farming methods, no improvements such as better seeds and no weather advantages. What had happened was that in this peculiarly manual system of cultivation, instead of three out of five workers being sick, five pairs of hands were available at the critical seasons. So, while the doctors reported 'No new cases of infantile malaria', they had also helped to provide the rice with which to feed the children they had saved.

There was, however, an irony: they had also created a chronic unemployment problem. Instead of three sick workers there

were now five active ones, but four could produce that food-increment and work the land to its capacity.

What is needed in East Pakistan is more land. And that is where the UN Food and Agriculture Organisation came in. The FAO provided the Pakistan Government with the services of Dr. W. Van Bloomestein, a land and water specialist, and Dr. G. C. W. C. Tergast, an agricultural economist, to work out a multi-purpose project to include drainage, flood-control, increase productivity and, at the same time, improve the navigability of the river courses and produce hydro-electricity in this fuel-less land which has had to import coal from Poland.

They studied the tassel of rivers in which the main streams of the Ganges and Brahmaputra become unknit and frayed-out. Flowing through the silt-lands of their own creation, they are continually changing their courses and, in the dry season, many of them dry up. Through this variability and uncertainty, double-cropping is possible in less than a fifth of the whole area.

Yet the experts found that the present crops could be increased by at least seventy-five per cent merely by simple methods of irrigation and drainage. That would mean that the average income, which is now less than £20 per year would be at least £30. Such improvement could be quickly attainable but the survey showed what a real development scheme could mean. With better agricultural methods and better seeds added to water-control to see that the water got to the right place at the right time, the experts predicted that the Ganges Delta region, instead of being a food-deficiency area, could become the great granary of South-East Asia.

The main scheme is ambitious but it could be reached in a series of phases, each of which would bring hundreds of thousands of acres into production.

Apart from the hill-tract region around Chittagong, which is now being developed into the main port of East Pakistan, the entire province is plain, built up by the rivers. It is the deltaic combination of the Brahmaputra and the Padma channel of the Ganges. The Padma is the biggest stream in the South-east and the Brahmaputra enters the province from Assam in the north-east. And these spread out into a system of what are now dying rivers, deteriorating into malarial swamps.

The experts have proposed a barrage across the Brahmaputra not far from Mymensingh. This would divert the river eastwards and revive the old courses of two hundred years ago, when the river changed its course. The main channel of the old Brahmaputra would be dredged and would provide a considerable drop, which could be exploited to produce hydro-electric power. This could then be used to assist the Padma part of the scheme, which involves power to pump the water from the river. Incidentally the barrage would provide road and rail communications which do not at present exist between the two halves of East Bengal.

This scheme would also solve the problem of the Megna Depression, an area of 2,000,000 acres. This is the wettest place on earth; the highest rainfall—480 inches—was recorded at Cherrapunjee. At present, during the flood-season, the Megna becomes a sea in which the villages, built on mounds, appear as islands, but in the dry season the sea disappears.

Here could be produced crops of *aman* rice. This is a remarkable plant which grows in rising water to as high as twenty feet. It keeps its head above water provided that the flood is not rising more than three inches a day. In the Megna Depression the rise is a foot a day, so that it drowns the rice. But a weir across the inflow could control that and bring a vast area into *aman* production. In the dry season water could be diverted into the Depression and irrigate 1,250,000 acres of redeemed land at the very least.

At present the total crop area of East Bengal is nineteen million acres. This flood-control and drainage, with proper irrigation, would affect 11,000,000 acres and secure double and even triple crops. In addition about 3,500,000 acres could be brought into production. These are the abandoned lands, like part of Jessore, where cultivation has been impossible because of malaria and because of the shortage of water at the proper seasons.

The suggested barrage over the Brahmaputra would be one-and-a-half miles long and twenty to twenty-five feet high. The scheme would cost something like £150,000,000 but the estimated increase in production is near £480,000,000 *per annum*. Notice that—an annual return, three times greater than the capital outlay.

Not only would it provide the immediate and desperate needs of the population—rice, sugar, oilseed and pulses—but would leave 5,000,000 acres for cashcrops, such as jute—a consideration which should not escape the manufacturers and workers of Dundee.

More than that, when the anarchic waters of the Delta have been controlled all kinds of other benefits follow. With reliable conditions mixed farming would become possible, provided that the farm units are big enough. But more than half the farmers of East Bengal have less than two and a half acres. In other words: there are too many people trying to get a subsistence from the land although the size of the units are below subsistence size. At least a third of the people now on the land would have to be withdrawn if decent farming, and a yield above subsistence, is to be achieved. That can only be done by the creation of rural industries. And those are possible with the provision of electric power from the Brahmaputra.

Moreover, with the recovered acres, the series-cropping and mixed farming, the problem of the cattle, for milk and for meat and for draught, could be met. Fodder grains could be grown and the development of vegetable oils in quantity for human consumption would also provide oil-cake for the herds.

A substantial fishing industry could be developed on modern lines in streams where the flow is fairly constant and which do not dry up or 'get lost' four years in five.

Then there is transportation. There are 30,000,000 boats on the rivers, creeks, estuaries and lagoons of East Pakistan. That means three craft for every five people in this part of the Ganges Delta and it means too that hundreds of millions of tons of produce is moved by water every year. Practically everyone and everything travels by water.

So the great river port of Naryanganj resembles a traffic policeman's nightmare—as though the streets at a busy crossing had dissolved into water, with even the buildings waterborne—in the form of floating godowns—and the traffic changed into boats. Every type of craft swarms there in reckless abandon. A sail-boat, carrying a wedding party with a hooded bride, cuts across the bows of a lumbering paddle-steamer. A 'noaka' or Ganges sampan with its vast expanse of sail bears down, its

decks stacked high with jute-fibre. Naked children, sculling madly, dart their little boats in and out of the confusion. Peasants row through the traffic-jam with loads of mangoes, rice and vegetables. Huge barges, muscle-powered with as many as nine men hauling on the oar, stampede the small craft as they lurch with the current.

These craft in their multifarious forms have been evolved and adapted to the vagaries of the great rivers in a region where few roads exist, or where they do, have had to be built of bricks, because in this vast alluvial area there are no stones. The people are dependent on water-communications and it is serious when a course dries up or is diverted and a village is left high and dry.

Pakistan has big schemes and UN Technical Assistance help in its efforts to help and improve the inland water transport. It is organising modern flotillas to ply from the new port of Chittagong and it has sent experts to, and borrowed experts from, the West to improve the methods of propulsion—diesel-motors, outboard motors, powered barges and so on. But the main problem is the fickleness of the water-highways and the need for disciplining the anarchic rivers.

The future of East Bengal and its teeming population depends upon getting water to the right place at the right time, regulating the floods and droughts, and turning a hungry, disease-ridden region into the granary the experts say it can become.

CHAPTER SIX

Tarja

WEST BENGAL

of all the queer modes of transport which we had to use on our various exploits, the most eccentric was in fact the most conventional—just the ordinary bicycle. At least, as far as I was concerned it was eccentric because most of the time I was ‘off centre’, floundering in wet paddy-fields, jute-rettting ponds and unsavoury ditches. No doubt in my youth I rode bicycles along parapets and the tops of garden walls, but I had lost the knack when it came to pedalling along the narrow dykes between the waterlogged fields, although the Indian doctors who were with us went gaily on like trick cyclists on a tightrope.

This was our only way to get around the flooded countryside of the Ganges Delta this time in West Bengal on the Hindu side of the border. The public health teams, pedalling along in single file, made a strange fresco on the flat landscape but it was their method of covering the 34 square miles and reaching the 68 villages and the 68,000 people included in the Singur Health Demonstration Area.

Singur is a district about 20 miles from Calcutta between the Damodar and the Hooghly rivers. It is used by the All-India Institute for Public Health, of which Colonel C. K. Lakshmanan is the Director, as a typical Indian village area for the training of Public Health students. Although the inhabitants may not realise it, it is now an international ‘classroom’ because the Institute under WHO now caters for international Fellows from all over S.E. Asia.

There are 800,000 villages in India and village life, in contrast to city life, is characteristic of all the countries in South-East Asia. The adjective ‘rural’ applied to health services is operative for most of the multi-millions, but rural

health services are practically non-existent in the region. The primitive conditions which make these services so necessary are themselves one of the reasons why they do not exist. Life in the backward villages does not attract doctors and nurses who are in short supply anyway away from the towns. Nor do city-born and city-trained doctors readily adapt themselves to rural needs, even when they want to do so. It is essential, therefore, that medical personnel should be converted to the ideas of rural service and important that they should be trained under the actual conditions.

Even for India, the density of population at Singur is high for a rural community. It is 1,900 per square mile. The average age of the population is twenty-three. Nearly half the school-children are undernourished, nearly an eighth of the population is chronically ill and 43 per cent of the population is ill at some period of the year. The houses are shockingly overcrowded and four out of every five families are in the hands of the money-lenders.

When, in one of the Singur villages, I commented on the number of little girls who were carrying their baby brothers and sisters around, the doctor who was with me looked at me to see if I was joking, and then realised that I was not.

'Not brothers and sisters,' he said. 'These are their own babies.'

Then I was told that the average age of marriage for girls in Singur was twelve years but 'seeing I was shocked,' he explained that this was a 'decided improvement' on the average a generation ago, when it was ten.

'But,' I asked, 'isn't there an act which makes the minimum marriageable age fourteen?'

He shrugged his shoulders. If anyone tried to enforce the act it would only mean an increase in illegitimacy, because a girl was regarded as nubile at ten or even younger. This accounts for the high fertility rate of Singur—213 as compared with 56 in Britain. It also helps to account for the high mortality rate. One child in five dies before the age of one year. Seven per cent of the babies of teen-age mothers are stillborn. The birth-rate would be even higher but for the fact that 29 per cent of the married women are widows who cannot remarry.

and dare not have children. This means an estimated reproductive loss of 15 per cent.

That is a social sketch of the region which the All-India Institute took over in 1945. The Bengal Famine, which killed a million and a half people in 1943, had a delayed effect in Singur and in 1945 and 46 there were desperate shortages. In 1946 there were the communal riots, and in 1947 there was the Partition and all the upheavals which it meant in this vicinity. Nevertheless, the Singur project went ahead and established itself as a demonstration of the public health services which even a poor community such as this might be able to finance and promote by co-operation.

Somehow or other we got around the villages on these bicycles—I, like a clown at a circus, Steinhouse, with the fixed concentration of a Red Indian brave on an unruly mustang, and Schwab, well down over the handlebars as though in the Tour de France. The ungainly procession would wheel into a cluster of mud-huts plastered with cow-dung, with cow-dung ‘pancakes’ spread on the roofs, drying as fuel.

In the average village there is the inevitable pond, haunt of the *anopheles philippinus*, the malaria-carrier in this part. But there were also pools all over the place, because the mud for the building of the huts had to come from somewhere and the easiest way was to dig it where you built them; it saved carrying. But in this Delta region water is reached a few feet down and a pond created.

The huts, their open windows barred like prison cells, were dim inside. Spiders, mosquitoes and every kind of insect pest were harboured in the rough mud walls. The only furniture might be an old *charpai* or pallet bed or just a mat on the trampled-clay floor. The living-room was usually a haze of smoke from the cow-dung fire on which the cooking was done. In the adjoining room, the children slept with the bullocks and the goats. The back-yard was a midden heap, neglected for generations. Flies swarmed everywhere, smothering the food and clustering on the eyes and lips of the nursing at its mother’s breast. Eye-infections were universal. The lavatory was where anyone chose to squat. The well for drinking water

was often no better than a cesspool, its walls broken and the community filth seeping in.

Those were the conditions with which the doctors of the Singur scheme had to grapple and which the international students have to study, if they are to understand the problems of rural medicine.

We saw how they set to work. We would prop up our bicycles where we could keep an eye on them because Bengali children are just as adventurous and mischievous as others.

We would join the Health Commissioners under the Bo-tree in the centre of the village. The Bo-tree, or *peepul*, is the alfresco council-chamber. It is a kind of fig-tree which can live to a great age and provide a great spread of shade. It is 'the perfect-knowledge tree' of the Buddhists because Gautama is supposed to have achieved enlightenment and become The Buddha under its protection. Even in a Bengali-Hindu community, which repudiates Buddhism, it is the tree of the temple.

The Health Commissioners are part of the Singur Plan. They are five men elected by the villagers. One commissioner is responsible for vital statistics. The keeping of the record of births and deaths is traditionally the job of the *chokidar* or watchman, but he is often illiterate and when the Government registrar wants to know from him each month how many have died and how many have been born, he has to rely on a memory which can be wildly erratic, especially in the case of infantile deaths which are so common that a birth-death cancels itself out in his mind. One official tried to overcome this by persuading a Singur *chokidar* to keep two bowls, one for births and one for deaths, and when someone was born to put a pebble in one and when someone died to put a pebble in the other. At the end of a month, there was one pebble in one of the bowls. The *chokidar* had put a pebble in the right bowl for the first birth and then someone had died and he had transferred the pebble to the other bowl and so on. The one pebble represented the excess of births over deaths, but the official was furious and berated the *chokidar*. Next month the bowls were brimming over. If the Government wanted pebbles, it could have them! So the Singur scheme includes a literate person who can keep the records for the *chokidar*.

A second commissioner is responsible for the control of communicable diseases, like smallpox, cholera or malaria. His job is to notify the centre when a case of cholera appears, so that the doctors can get busy treating patients, giving inoculations and disinfecting possible sources with bleaching-powder. Smallpox is always recurring but is kept in check by widespread vaccination. No case of cholera or smallpox has occurred among school-children in the Singur area since 1944 because of inoculation and vaccination. Nor have there been any malarial-spleens among children in seventeen villages and none of the sixty-eight villages has had more than 10 per cent--a gratifying tribute to the measures taken to control the *anopheles* in this particular district, where previously practically everyone was regularly ill of the fever.

A third member of the commission was responsible for 'environmental sanitation'. (What that is in Bengali, I simply cannot imagine!) His was the most difficult assignment of all.

He shook his head glumly as the doctors questioned him about the progress with the tube wells and the latrines.

'The tube wells, he says, are no use,' interpreted one of the doctors. There was a lot of bickering and a good deal of vehemence. The argument brought around first the children and then most of the village; brought the teacher from his schoolroom, the *chappati* seller from his kiosk, the boy from the pond where he was scrubbing his bullock, the *saddhu*, or holy beggar, with his filthy rags and his wild beard and hair, and the vultures, wheeling overhead.

Wasn't the water good? I asked. Perfectly good, expostulated the doctor, and cleaner than anything they had ever known.

There was another heated outburst and it was obvious that the crowd was behind the protests of the commissioner. The doctors curbed their impatience and were obviously conceding the point and negotiating.

'Yes,' said one of the doctors, 'the water is fresh and clean and wholesome but they say it is unholy. They have discovered that the pump contains a leather valve and to drink water which has been in contact with leather is a great sin. Leather comes from the sacred cow. We will have to substitute rubber or something, but we will have difficulty in convincing them and reconsecrating the water.'

And the latrines? The doctors were glum. They had introduced borehole latrines—3,000 of them for the 12,000 families—but not a quarter of them were used. They still preferred the banana grove.

'We will have to wait for the generation to which we are teaching hygiene in the schools,' said the doctor, resignedly.

One of the difficulties both with the tube wells, of which there are not nearly enough, and the sanitation, is the cost. All that the scheme had been able to do was to provide demonstration installations, and thereafter the villagers had to finance the rest. A borehole latrine would cost about £7 10s. and a tube well about £38—in communities where the average *per capita* income is 5s. 6½d. a week. Of that, 4s. 6d. goes in the barest necessities of food, which are still grossly deficient by nutritional standards. In such villages, the average height of adults is under five feet three inches and weight is less than that of an average twelve-year-old boy in Britain.

A fourth health commissioner is concerned with Mother and Child health. Obviously his problem starts from the child-mother. The United Nations Children's Fund is helping and has provided equipment for a maternity ward and clinic at the Singur Centre, but again there is an ignorant distrust, a reliance on mystical charms and unqualified practitioners, and on the 'dais', the midwives who are casteless and lower than the sweeper. For childbirth is 'pollution' in the Hindu religion.

Behind all this is the work in the schools. There are forty-three schools in the vicinity of Singur and health education and school-medical services are an important feature. These schools badly need extending and improving, but again the desperate poverty of the people is a deterrent and the desperate poverty of the teachers is not conducive to a high standard. We went into one at Ratanpur—a mud and straw structure without any equipment, with the children squatting on the mud floor round a teacher in a bedraggled *dhoti* (a loin-cloth hitched up between the legs to make a sort of pantaloons) and a week's beard. They were hanging round him and (apparently) the only textbook.

No equipment? I am wrong: the doctors had brought in

a model of the *philippinensis* mosquito for 'Know thine enemy' lessons. The expression on the children's faces was one of frightened amazement. It might have been a dragon!

I thought of the incident in Indonesia where the doctors had put up a poster—pretty crude but rather effective it seemed to us—of a peasant shivering (zig-zag-zig lines all round him) over an empty rice-bowl and a giant mosquito plunging at the back of his neck.

A peasant gazed at it in amused bewilderment and came over to the foreign doctor and said, 'Tuan, if you have mosquitoes that size in your country, I'm sorry for you. Here they are just this small. . . .'

That must have been the reaction of these children. When we get sophisticated ideas about 'visual aids' we are liable to forget that, although simple people and children may live in a fantasy of ogres and mysteries of their own imaginings, they take very literally what they actually see, and that they have no sense of magnification which we take for granted. And I could not help feeling, as I watched those children, that the deadly *anopheles* with which they were familiar would seem a friendly little thing after the intimidating monster of the doctor's creation.

The young headmaster, who, in spite of the pittance-salary, was obviously intense about his job (and smart in appearance in contrast with his assistants) paraded the children for 'health drill'. Like a sergeant-major on parade, he examined them to see if they had washed. He examined their teeth to see that they had cleaned them. He inspected them for lice and fleas and, from a first-aid kit provided by the Singur Centre, he annointed their sores and disinfected their cuts. And the children obviously understood what it was all about.

There is the hope—in the children. The rest of the community is illiterate as to four-fifths of the men and nine-tenths of the women. Most of the others are 'just literates', which the doctors and others find almost worse than illiteracy because it masks an ignorance of all the essentials of education. As one Indian professor expressively put it, 'It's a coating of sandal-wood powder on the scabby face of ignorance'.

Ignorance is the enemy almost as great as all the diseases, because it makes people submissive to these diseases and to

the conditions from which they derive. Yet it is something which cannot be tackled except in their own idiom and through their own experience.

One of the Singur doctors was discussing this with me, back in the impressive centre, with its modern laboratories and well-trained staff. How were they—Indians, who knew what was needed and what was available through medical science—to break through this jungle of ignorance? People were quite willing to have their houses sprayed against inalaria but it was mute submission and not real understanding—just something magical, and not something rational which would persuade them to turn from the quacks to whom most of them still went in spite of the clinics and dispensaries.

I told him about Singing Supraptor in Java, the scientist who took the peasants' own customs and took their songs and turned them into lessons about green manure. Was there nothing similar in the traditions of Bengal?

'Tarja!' he exclaimed. It might have been the Bengali version of 'Eureka'. 'That's it! Tarja!'

And he explained how one of the great entertainments of the villagers was the strolling-players who went round in costume. They staged terrific arguments, quarrelling in contemporary patter, and finishing up in mock-fights. It was a man-sized version of a Punch and Judy show.

'Tarja! That's it!' he repeated, 'We'll get these mummers to put on our arguments—one defending the doctor and the other the mosquito. And a few annas will make sure that the doctor always wins!'

I am 'all for it'. If the advantages of science are to get across to the mass of the people, they must be 'box-office'. That is something which Technical Assistance is learning the hard way.

Certainly, at Singur we met our Three P's—The Problem, The Programme and The Progress. The first was writ large; the second writ clear; and the third writ, not large yet, but in luminous letters.

Cheopis

CALCUTTA

THE way to the plague-spot lay through the sculptor's quarter of Calcutta. The sculpture was decidedly monotonous, consisting entirely of clay models of Kartikeya, the Hindu god of war. Booth after booth and stall after stall were devoted to making and selling this extraordinary idol, a six-headed god riding on a peacock and brandishing a variety of weapons in his twelve hands.

When I commented to the Hindu doctor, who was with us, that this worship of war seemed to be ominous, he pointed out that, contrariwise, it showed a concern for peace. Just as down at the Kali Ghat, by the river, they offered blood sacrifices to Siva, in one of her manifestations as Kali, and called her 'the gracious goddess' although she was the most malign, it was to distract her from death and destruction, so too it was with Kartikeya and his war-making. It was a policy of appeasement.

Picking our path through this jungle of clay arms, we carried our own particular war into the recesses of the slums. The conditions beggared description—narrow alleys between mud and bamboo huts, huddled together without ventilation, adhering like revolting fungi to the walls of warehouses and factories which were themselves slums. We had to clamber over the sick littering the ground and over the children squatting and rooting in the filth and over the emaciated cows lolling in miserable and disease-ridden sanctity. As Eric said, the human flotsam and jetsam, the homeless smothering the ghats, or river-shores, were better-off than those who stifled and rotted in these breathless alleys.

On the world map of pestilential diseases, Calcutta appears as a plague-centre—the real bubonic plague, the Black Death which destroyed a quarter of the population of Europe in the 14th century, and the Great Plague of London in 1665. But

the large-scale map does not narrow the focus as we were doing to a comparatively small group of streets in Calcutta.

There plague slumbers like a sleeping volcano, occasionally throwing up a few cases, sometimes scattering the disease to a few hundreds more in the city and the adjoining city of Howrah, but always liable to erupt. The plague death-rate for the whole of India is 32,000 a year. There are a few such endemic plague centres (we had already encountered one in the mountains of West Java) which keep the medical officers of the entire world on the alert.

[With yellow fever, smallpox, typhus and cholera, the existence of these plague-spots makes necessary the World Epidemiological Station of the World Health Organisation, which we had visited at Singapore. There a twenty-four-hour watch is kept on reports coming in from all over the East, and every day bulletins are signalled by radio and relayed by Geneva and other stations advising port authorities, air-ports, ships at sea and aircraft of any outbreak. It is one of the most effective international defence alliances which has ever been achieved.]

And here were we, hoping that our plague inoculations were dependable, going right into the heart of the plague-site. With us were the gas-squads, their cylinders of cyanide gas on their backs and with DDT sprays. The people, preoccupied with their squalor and misery, did not even bother to look as we passed. The plague-inspection is a regular thing.

Cheopis is more malignant than Kali or Kartikeya but it does not figure in the Hindu pantheon of gods because it is a flea, which carries the *bacillus pestis*. Its host is the rat and if it cannot feed on rat's blood it will settle for human blood. So the rat is the intermediary and the victim. When it is infected it develops the sinister *bubo* or swelling, that stigma of death we read about in the accounts of the Great Plague, and when it dies the fleas desert the corpse and infest humans. In man, the bubonic form can turn into the even more deadly pneumonic type.

We went groping through a dim alley and into what could have been a mine-gallery but was in fact a human habitation, leaning against the wall of a warehouse.

The objective of the squad was the rats, the breeding-pastures of the fleas. And rats abound in these slum conditions.

Everywhere there is garbage. The warehouses are rat-ridden. The *kutchas*, these bamboo and mud hovels, are beset by rats. Rats are everywhere. And they were particularly plentiful in the grain-store for which we were making.

There was no difficulty in finding the rat-holes. The squad sealed as many as they could find, leaving an obvious one into which they pushed the nozzle and released the cyanide gas. Rats came swarming out desperately gasping for air, and died at our feet—and at the feet of the mother who was clutching her infant to her breast. Those which were still too lively were clubbed. Some escaped to die elsewhere and an untold many died in the rat-burrows, which the team proceeded to treat with bleaching-powder to reduce the smell of the corpses when they decayed. Meanwhile others of the squad were energetically covering the corpses with DDT. The cyanide would not kill the fleas, which might find human refuges, but for DDT.

Other methods are to lay poisoned bait and to set wire-traps in great numbers. These traps are collected and taken to the plague centre, where there is a gas-chamber^{*} and an incinerator and where the rats can be examined to see if there is any sign of plague. If they have it, the efforts will be redoubled and the people of the slum inoculated wholesale with plague-vaccine.

Research goes on all the time. The whole private life of the cheopis is systematically investigated. The relation of its life-cycle to temperature and humidity is studied. And so too with the rats. One thing which has been found about them is that they are extremely devoted to their particular haunts in these particular areas in Calcutta. Rats which have been trapped and have been found free of plague have been ear-marked (literally) and driven in lorries eight to ten miles out of Calcutta and released. They have found their way back.

Understandably, the Bengal health authorities rather resent being just a black spot on the map. (We were not at all popular when we presented our assignments in Bengal—'Plague', 'Cholera', 'Malnutrition', 'Unsanitary Conditions'.)

Professor R. B. Lal, of the All-India Institute of Hygiene, pointed out to us that there was no history of plague in Bengal until 1895, when it was introduced from Hong-Kong by the troop-movements of the Shropshire Regiment. There

were cases among the civil population but they were not recognised—except retrospectively—as plague and it was not until 1898 that the disease became epidemic and in the serious pneumonic form. It persisted until 1925, waxing and waning and finally (apparently) petering out. No more plague cases originated in Calcutta until April 1948—fifty years to the day and in exactly the same district of the city. Professor Lal claimed that the true endemic areas were outside Bengal—for instance, some villages in Bihar, where plague was so consistently present that nobody noticed it and cases were rarely reported, though migrants from such districts could carry it and start an epidemic.

The fact that it has been held in check among the teeming masses of Calcutta is a tribute to the effectiveness of the working of the Calcutta Plague Control Organisation, which fights this constant battle with cyanide, DDT, rat-bait, trappings and inoculations.

On the disease maps, Calcutta figures also as a cholera blot. Every day the newspapers of the city report a number of cases. Again, the medical authorities protest, the city is the reluctant host of an unwanted immigrant, since the origins of the present cholera can be traced back to Basra and the year 1931. When that outbreak occurred, it was thought that the deserts would be a sufficient barrier to protect the teeming East, but it spread.

Cholera, which kills 200,000 a year in India, is a disease in which the *vibrio*, the cholera organism identified by Koch in 1892, is excreted by a sufferer, or sometimes by a 'carrier' who is immune from the disease but can pass it on to others. It can be conveyed by dirty handling of food or by houseflies, but mainly by contamination of drinking water.

Every year and all the year, Hindus bathe in the sacred waters of the Ganges. If they are sick and ailing, that is the more reason why they should be 'purified'. And sometimes they are sick and ailing with cholera. So the waters of the Ganges, of its branch, the Hooghly, which runs through Calcutta, and of the sluggish canals which are fed by the rivers, are laden with the organisms which cause enteric, typhoids, dysenteries and cholera. And, apart from those who depend on the waters for

their domestic purposes, there is a trade in the 'healing' waters which are bottled and sent in lethal doses all over the country.

There is nothing like enough filtered water for the four million people of Calcutta. Most of them are dependent on direct supplies from the Hooghly, or the canals and from tanks, which are used for bathing. The river and the canals are also the sewage drains.

Some authorities dispute that the sacred waters are responsible for cholera, but the microbiologists of the All-India Institute for Public Health take regular samples from all those sources—never less frequently than once a week—and they can usually forewarn the health authorities of impending outbreaks. They find the *vibrios* in the waters of the Hooghly and the canals but not, strangely, in the bathing tanks.

When one sees the conditions under which people live in Calcutta, the way food is handled, how it is washed in the murky waters, how people drink what is little better than sewage, how earnestly hygienic people squat in the roads and scrub their teeth with their fingers dipped in puddles, and how everything and everybody is covered with flies, one wonders why millions more do not die of pestilence. My only bout of sickness on the journey itself was in Calcutta, and I have never been quite sure whether my stomach-misery was actually due to some infection or whether it was just a psychosomatic upset induced by the manifest diseases I saw around me.

Today India has some of the best laboratories and best experts in the world for dealing with cholera. The Haffkine Institute of Bombay is world-famous and its director Sir Sahib Singh Sokhey became Assistant Director-General of the World Health Organisation. They have well-equipped institutes for manufacturing cholera vaccine and can rush 'first-aid' into any quarter where the disease threatens.

Then there is scrub typhus. One type of typhus is carried by lice and another by ticks, the *trombiculae deliensis*. It was not until the Second World War that India discovered that it had endemic areas of scrub typhus. It must have been there all the time, but the people must have become inured to it or doctors could not distinguish it from the medley of afflictions from which

they suffer. But the movement of troops fanned it into epidemic proportions.

In 1946 there was an ominous number of reports of 'P.U.O.'—'pyrexia (or fever) of unknown origin'—from the Barrackpore cantonment, north of Calcutta. The army was affected, but a large number of civilians were affected too, including young people. Para-typhoid was suspected but a detailed inquiry revealed scrub typhus and the trombiculate mite, which in its larval form takes only one drink of blood in its lifetime, but contrives in the process to pass on the organism of this disease.

Scrub typhus had played havoc with white troops in the jungle war—25,000 casualties—and in 1948 it provided one of the most spectacular successes of the antibiotics.

A year before, a specimen of a mould found in the soil of Venezuela was sent to a Yale botanist, Dr. Paul R. Buckholder. It seemed to have some useful properties in the penicillin tradition, and an American pharmaceutical firm took it up. Their chemists isolated the active principle and crystallised it. It had its 'try-out' in a typhus outbreak in Bolivia, where Dr. Eugene Payne used it to treat sixteen typhus victims, of whom fifteen were considered hopeless. All rallied within twelve hours and recovered within three days. This was repeated in an outbreak in Mexico by Dr. Joseph Smadel, the U.S. Army tropical diseases expert. The results were so striking that Dr. Smadel collected a team of army medicos, two tons of equipment and all the supplies of the drug, chloromycetin, then available in the world—one pound—and flew to Malaya to submit it to the most exacting test of all, against scrub typhus under jungle-warfare conditions.

An epidemic was raging. With the co-operation of the doctors of the British Colonial Medical Service, Dr. Smadel set up his unit at Kuala Lumpur. Forty cases of scrub typhus, many of them far gone, were brought to him. The drug was given in tablet form and within thirty-one hours the cases recovered. There were no failures.

In the meantime, a team was working on the synthesis of the drug in Detroit. Dr. Mildred Rebstock, a twenty-eight-year-old research chemist, was the first to produce it—a combination of two chemicals normally poisonous—a nitrobenzene compound and a derivative of dichloracetic acid, sometimes used for

treating warts. The first sample—eleven and a quarter grammes—was flown to Malaya. Two Gurkhas, in a dying condition, were given this, the first antibiotic to be produced by synthesis and not from a mould, and they made uninterrupted recoveries.

It is nice to know that chloromycetin or, as has since been found, aureomycin and terramycin, can cure such diseases, but they are expensive. When I came back from S.E. Asia with an unknown complaint, they cured me with chloromycetin costing £21. That is all a Bengali has to live on for a year.

In an epidemic millions of people are at risk. In the congestion of Calcutta a pestilence could rage like a forest fire. Infection might travel with the speed of a jet-liner. Curative drugs are not the answer, which must lie in prevention.

The All-India Public Health Institute and the local M.O.'s are conducting research and taking measures. The World Health Organisation brings together experts on plague and cholera and typhus and maintains that daily radio warning system. But everyone knows that the ultimate answer must lie in the clearing out of those shocking slums, harbours not only of plague and cholera but of all manner of foul diseases, and in the improvement of sanitation and the filtering and purifying of water, even if it comes from the sacred Ganges.

That is a tremendous and costly undertaking. We saw something of the work of the Calcutta Improvement Trust which is trying to deal with some of the worse slums—clearing whole sites and replacing the slums with decent houses. But these new houses will only house a fraction of those displaced. It is a Herculean task, cleaning this Augean stable.

CHAPTER EIGHT

Jagganatha

ORISSA

WE tried to get into the temple of the Juggernaut, and we were lucky to escape unscathed. At one moment, the attitude of the ragged pilgrims at the temple gates was decidedly dangerous, and even the arguments of the Hindu scientist who was with us did not improve the threatening situation. They seemed to be more angered by his efforts than by ours. As we retreated, he explained why. He was wearing trousers instead of a *dhoti*, the loin cloth which is hitched between the legs; he was wearing cow-hide shoes and, when he had offered to take them off, they had assailed him for wearing a leather strap on his wrist-watch. He could not be a true Hindu.

These followers of *Jagganatha* are fanatics, whose excesses gave to the world languages the word 'Juggernaut', meaning an object or a belief calling for blind submission and ruthless sacrifice. From this temp^le, barred to us, emerges the horrific image of Juggernaut (to use the corruption of the Sanskrit which means 'Lord of the World'). This represents the eighth incarnation of Vishnu and he is symbolised by a great wooden image with a red body, black face, gilt arms, a gaping mouth red with blood and eyes formed of precious stones. At his festival he is mounted on a huge car, with sixteen wheels. On either side of his throne is his brother Bala-Rama and his sister Subhadra. The car is drawn by pilgrims who come in their hundreds of thousands from all parts of India. Formerly (if at all) pilgrims used to hurl themselves under the giant wheels to be crushed to death.

What had brought us to Orissa, however, was not the black-faced deity but what Edison called 'That ruthless Juggernaut, the needs of man'. Our errand was to consider not immolation but preservation. Our pilgrimage was in search of life for the

hundreds of millions of hungry people in South-East Asia. Our destination was the International Research Station at Cuttack, in that dreary delta where the Mahanadi river fans out into the Bay of Bengal.

It would be difficult to imagine a more depressing setting for one of the world's most hopeful enterprises. The poverty and misery in this region is appalling. Its soil is rich and its people poor. There could be abundance; and disease is the reason why there is not.

The tribulations of Job were as little compared with what the people of Orissa have to endure—malaria, filariasis, leprosy, venereal disease, tuberculosis and yaws.

No fewer than four different types of mosquito carry malaria in this region—*fluvialis*, a midget mosquito which breeds in the clear running water of the hills; *sundaicus*, which breeds in the brackish waters of the coast; *annularis*, frequenting the ricefields of the plains; and *phillipiensis*, on the borders of Bengal. They all have different habits and attack at different times. One in three of the people are down with malaria during the rice-harvesting period. The onset of malaria is so severe that the sickness rate during one critical month loses the chance of a second-crop, deprives them not only of rice but of pulses, which they badly need to supplement their diet, and reduces their production of jute, which is their cash-crop.

Another mosquito, the *culex*, spreads the blood-parasite filaria, which causes elephantiasis, a grotesque deformity. We saw many cases—people hobbling along or, more often, sitting immobilised in the sun outside their huts, with legs like elephants. But victims develop this gigantism in other parts of the body as well and even when the disease has not reached its grossest forms it disables people from active work. It is due to the mosquito injecting thread-like larvae into the blood-stream, which grow into worms and choke the glands to prevent the functioning of the body-lymphs. Half a million people in the coastal areas of Orissa suffer from this disease.

Venereal disease, tuberculosis and leprosy are widespread among the peasants and yaws is common in the hills.

The All-India Medical Research Council, in conjunction with the Government of the State of Orissa, is carrying out field tests of *hetrazan* as a preventative against filaria-infection,

and DDT is being used against the *culex* and the malarial mosquitoes.

In the Jeypore Hill-tracts the Orissa Government had the help of the World Health Organisation and UNICEF, the Children's Fund, in a large-scale malaria control demonstration which had shown what was possible in ridding the countryside of disease. This was a particularly important operation because great stretches of country had been abandoned to jungle and to the aboriginal tribes (extremely primitive peoples) because the mosquito made development impossible. Now it can be recovered and become new food-producing land, so desperately needed in hungry India.

Control of malaria costs eight to ten annas—say, tenpence—per head of the population protected. But it can repay that a hundredfold in increased production.

That was the background against which we had to set the International Institute for Rice Research, of which we had been told to expect so much. The experiments there have a concern for half the world's population. It is not a matter of academic interest but of life and death.

Seventy per cent of the Asian peoples depend on rice as their staple diet and, while the population has increased by over 10 per cent since the outbreak of the Second World War, the rice-production is no greater, and in India considerably less, than in 1939. The region as a whole, instead of being an exporter of food, has become an importer of food, depending on bread-grain from North America and even having to turn to Egypt and Brazil for rice. Countries like India are continually poised on the verge of rice famine and the problem becomes the more complicated because millions who eat rice cannot stomach wheat. So the answer has to be found in increasing rice.

Rice-production depends on methods which are difficult to change. We had seen them in the jungle of Borneo where, by burning the trees and the undergrowth, the Dyaks cleared the ground and go' the ash. We had seen them plant the rice in dibble holes open to the birds, because to cover the seeds would have shown the Rice God that they did not trust him. And we had seen the poor results. But most of South-East Asia eschews

dry-rice growing. By laborious hand methods they make dykes of muds and build terraces, like those in Java, or gradient plots, into which the water can flow and later be drained. They prepare the mud with primitive ploughs or harrows, plant the seeds thickly in the nursery beds and then thin them out by pulling up the seedlings and planting them stem by stem in the flooded ricefields. When the rice is nearing maturity, the fields are drained for the ripening and then the grain is laboriously harvested by hand. Threshing is done either by hand-flailing or by trampling by teams of oxen harnessed, perhaps seven abreast, to a rotating arm which keeps them monotonously to their circular track. Then the evening winds winnow the rice. It is a peculiarly manual operation, to which, on present showing, mechanisation would make little contribution. Even if the machines and the means were available it would be difficult to wean the rice peasants from the habits of centuries. Even though they might recognise the value of new ideas in cultivation, it would take time for them to learn new skills and modify tradition.

On the other hand, better seeds if they are available could demonstrate their value and carry conviction by the results of a single season. If, therefore, the plant-breeders can produce varieties which can give higher yields from existing acreages they can bring about increased food-production and, progressively, a revolution in rice-production, because, if the experts can prove their 'know-how' in terms of seeds, the peasants will listen to them when they suggest other improvements in husbandry.

That is the profound significance of the Rice Research Station at Cuttack, where, with the Indian Government as host and the Food and Agriculture Organisation of the United Nations as sponsor, ten countries—India, Pakistan, Burma, Ceylon, Indonesia, Indo-China, Thailand, Malaya, the Philippines and Japan—are combining in a comprehensive project for the hybridisation and selection of new strains.

It was not an impressive place; there were no pretentious buildings, just a few modest bungalows which served as laboratories, some tents where work was temporarily housed, and experimental rice-plots. Under the Colombo Plan, hostel buildings were being provided for the research-workers.

Just what is involved in these experiments in cross-breeding the *japonica* and *indica* varieties of rice can be gathered from the figures showing the comparative yields in lbs. of rice per acre of the two types.

	<i>Japonica</i>		<i>Indica</i>
	lbs. per acre		lbs. per acre
Japan	2,352	Java	1,034
Egypt	1,890	Thailand	888
Korea	1,593	Burma	816
China	1,549	India	772
U.S.A.	1,390	Philippines	703
		Indo-China	716

From this it is apparent that the yield of *japonica* in Japan is three times as great as that of *indica* in India, and more than twice that of Java, where the rice-husbandry is exceptionally good. There may, of course, be many other factors besides good seed, such as better methods of cultivation, to account for part of the increase but the disparity between the countries with high yields and those with lower yields is wide enough to establish the definite superiority of *japonica*.

There is, however, no question of just taking the *japonica* and transplanting it into S.E. Asia. It is the rice of the high latitudes, more temperate conditions and longer days during the growing season, while *indica* is the rice of tropical and equatorial Asia. The northern variety is strong in the straw and can carry heavier heads. The tropical variety is weak in the straw and can therefore only carry light ears, so that if, as has been tried, fertilisers produce heavier ears, the plant wilts.

There can be no direct transfer; the process can only be accomplished by hybridising the two varieties and even then only by local adaptations of the *indica* of the various countries.

Nor is hybridisation an easy matter because the *japonica*, accustomed to long hours of daylight, flowers in a hundred days while *indica*, in the equal days and nights of the tropics, takes four to six months. To achieve a photo-periodic balance between the two, so that both flower at the same time, the flowering of the *ndica* is speeded up by exposing the plants to artificial light.

Then the experts get busy examining the characteristics

of each plant under the microscope, studying the pollen and transferring it by hand to the female stigma. The heads are then covered with paper bags. This has to be done with each of the individual plants of each of the different strains from the varied natural conditions of the participating countries.

From the first 60,000 plants pollinated, 12,500 fertile seeds were collected, again by hand. Even then, the task had barely begun. I saw in the plots all kinds of freaks. Tall straws with light heads. Dwarf straws with heavy heads. Others had favoured the *japonica* parents and refused to flower in the abbreviated daylight. Other types which may develop usefully under Indian conditions may be unsuited for Javanese cultivation and so on and so on. There can be no simple standardisation, only a systematic process of adaptation and acclimatisation.

This takes time but the rewards are high—as high maybe as that from discovering a new continent or opening up, as we did in the last century, the prairies, the pampas and the veld. If, for example, a suitable hybrid could be produced for India it is theoretically possible to double the yield from the existing acreages and have 30 million more tons of rice a year, which would transform the precarious food situation of the country.

One of the startling features of this work is that it reminds us how little we know about rice on which half the world's population depends for sustenance. When we think of what has been done with wheat, adapting and breeding, producing disease-resistant strains and evolving types which can push up beyond what was once the climatic limits of grain and down into the tropical deserts, it is shocking how rice has been neglected.

As Dr. L. E. Kirk said as Chief of the Plant Industries Branch of FAO, 'Gains from a thoroughgoing rice-breeding programme are so broad that this work is fundamental to any improvement of Asia's crop position. Plant-breeding, in other crops, has done more to increase production than any other factor'.

People have said to me when I have discussed what I saw at Cuttack, 'But even if they got these seeds, how could they ever hope to spread them through the whole of South-East Asia? It would take generations'. Not if it is done properly.

For example, I saw in the new lands of the Himalayan *terai* (which are the subject of the next chapter) a method by which it could be done economically and quickly. Incoming farmers are given the seed for the first sowing from the Government seed farm. From their first harvest they return the quantity they borrowed plus 25 per cent. A heavy levy, perhaps, but it acquits them of their seed-debt to the Government and provides an increment so that every four farmers settled this year helps to settle five farmers next year, apart from those who are drawing on the seed-farm itself. On this principle, with such seed farms in the main localities throughout the region, the dissemination could be widespread and rapid.

Cuttack, however, is not entirely preoccupied with this hybridisation programme. It is also concerned with breeding rice resistant to plant-diseases and to pests and with methods of fertilising the rice soils.

The famine in 1943 was due mainly to the failure of the rice harvest from a fungus disease, leading to the loss, in some areas, of 90 per cent of the crops. Pests, like the gall-fly attack growing crops and can destroy an entire harvest. But the scientists have found that this gall-fly affects young plants only between September 14 and October 15. So that by planting earlier strains, the rice can dodge the gall-fly, which, its occupation gone, will cease to exist. The borer grub, on the other hand, attacks in two stages. It kills the earlier plants but those which it attacks in the later stages lose their grain ears. Some rice plants are mildly scented; the borer likes these but the gall-fly is repelled by them; so there can be another trick in switching the varieties so that they would frustrate the pests. Another thing which they have found is that par-boiled rice seeds, while not losing their virility, are less susceptible to pests. They are experimenting with fungicides and with various methods of immunising rice-plants against plant-diseases.

Work is going on with green manures. This means growing some leguminous plant and ploughing it in. But there are also interesting developments in artificial fertilising. These, in the past, have not been very successful but the chemists at Cuttack have discovered why: they have found that soil in the water-logged paddy-fields has a chemical reaction quite different from that of dry soil in response to fertilisers. Instead of putting

the fertilisers in the upper layers, they plough it into the deeper layers and have succeeded even in the normal local variety in getting a 27 per cent increase in yield.

Apart from the actual work and the potential achievements, this station at Cuttack is an interesting example of what can be done at comparatively little cost if nations will combine, instead of dispersing, their efforts. The station already existed as the All-India Rice Station. The International Rice Commission wanted to promote this work for the benefit of a whole region. The Government of India offered the facilities for the basic researches, the extension of which is, of course, in the follow-up work in the plant-breeding institutes of the separate countries. FAO with funds from UN Technical Assistance Board provided a modest subsidy and financed fellowships to enable research-workers from the various countries to work there, as well as supplying equipment and the salary of an Associate Director to work with Dr. S. Ramanuzam, the Madras, whom the Indian Government provided as Director. And the Colombo Plan lent a hand.

There, in Orissa, are the two Juggernauts of mythology and reality—the Juggernaut of the gory jaws and the gleaming eyes, commanding blind relief, and the Juggernaut of the needs of man, commanding wide-eyed knowledge and open minds. The fertility rites of the one demands the fertility rites of the other. For the multiplying millions have to be fed.

CHAPTER NINE

Mowgli

HIMALAYAN TERAI

AHEAD of us, the Himalayas, with Nandi Devi as the centrepiece, formed an horizon of snow-capped skyscrapers. On the forest road we met flat-faced, slant-eyed, murky-skinned Tibetans on their small, sturdy mountain ponies. Alongside strode the women, their black, voluminous skirts frisking the dust. On their heads (the women's) they balanced bolts of forage-grass with sickles stuck into them as though impaling them in their skulls. On their backs (the women's) were the *killas*, the long baskets, laden with the crude but attractive black jewellery, set with topazes, which they would trade in the villages and towns all the way to Delhi. We saw, too, a sight strange for India: women of the Tharu tribe driving *longas* while their men-folk took a back seat.

There had been a disputed passage at a ford between our command-car and a truculent train of snow-bred, shaggy-haired Bactrian camels. Monkeys had jibbered at us out of the niches and from the broken pediments of vine-smothered ruins. A jackal had snarled in our path and then bounded into the undergrowth. It had been hanging around the spot where two nights before a man-eating tiger had savaged and killed two men. We had heard the trumpeting of the wild elephants. And there had been an uncomfortable interlude when our car had stuck while fording a stream, which was the waterhole for jungle beasts and where, as our wheels spun helplessly in the mud, we speculated as to whether the pug-marks were the footprints of a tiger or a leopard. We found some comfort from Dr. Issaris's tiger-gun, which he kept loaded beside him, and we knew that a shot would bring reinforcements in the person of Nurse Pepper, who was ahead of us, with her tiger-gun, in a jeep.

For this was the real Tiger Jungle, which might have come

straight out of Kipling and the Mowgli stories. It certainly came straight out of the *Man-Eating Tiger of Kumaon*, for here was the actual jungle where Jim Corbett, the white hunter whose name is still legendary among the tribes, went out alone to face the killers. Indeed, the base from which we were operating—the World Health Organisation Headquarters at Haldwani—was a stonethrow from the house where Corbett lived and from which he made his sorties.

But we had not come to the Himalayan *terai*, on the borders of India, Tibet and Nepal, to find Mowgli the Man-Cub, nor to check up on the *shikar* yarns of Corbett. We had come to see the jungle in retreat. And here it is in full retreat.

The story of the *terai* is, I suggest, one of the most remarkable and hopeful of our times. It is the story of the modern Frontiersmen winning new homesteads not from the open prairie but from tangled jungle. Their outriders were not Buffalo Bill and the Red Indian Scouts but doctors and nurses. Their weapons were not rifles but DDT spray-guns, and the enemies from which they had to wrest the land were not fellow humans but tiny mosquitoes. The settlers did not come in covered wagons but we saw them, at the end of their four-hundred mile trek, Hindu refugees from Moslem Punjab, marching along with all their worldly goods on their heads, with the women suckling their babies as they walked.

To grasp this story of the *terai*, it is necessary to go back a thousand years to the time when there was a prosperous peasant civilisation, here. It was a fertile land, alluvial soil washed down from the mountains.

Terai is not a locality. It means the land which inclines from the Himalayan foothills (the *bhabar*) to the Ganges plains. It stretches along the northern frontiers of India. This particular *terai* lies south of Naini Tal and Almora, in the crutch formed by Tibet and Nepal. It is a land of many rivers, the snow-fed tributaries flowing south and west to the Ganges.

In the olden days, the industrious peasants sought to extend their cultivation, in area and in season, by cutting irrigation canals from these rivers. But they cut the canals across the

natural drainage of the region and the ground gradually turned to swamp. It became the breeding place of mosquitoes, including the *anopheles* which transmits malaria.

In the upshot, the mosquitoes won and malaria either killed or drove out most of the peasants. The jungle marched in and smothered their canals and overgrew their villages and towns, and where farms had prospered, ranged the tigers, wild elephants, the blue oxen, the jackals, the leopards, the cobras, the chitals and the wolves. The monkeys held ribald court in the halls of princes. Of that jungle, Ping, the Mosquito, was King.

In an official report of fifty years ago, which I saw, this region was written off as unsuitable for development. It was described as a hopeless land of reeds and jungle grasses, with a 'deadly climate' (on the contrary, the climate is not at all deadly; the report, as so often in these cases, was confusing climate with malaria). Only sparse cultivation was possible (said the report) and that by the Tharus and Bhukasas, two tribes reputed to have acquired an immunity to malaria.

These are certainly hardy tribes which have persisted since times so remote that they are probably the aborigines, although they themselves claim, and perpetuate in their customs, a more romantic account of their origins. According to this, they are descended from a Rajput Royal House, the Rajputs being of the warrior caste of the Hindu socio-religious system. When the king and the princes of this royal family were defeated and killed in battle, the Rajput princesses fled into the jungle with the servants. From the royal women and the two servant sub-castes, the Saises and Chamars, came the Tharus and Bhukasas respectively. There might seem to be a confirmation of this in the relative status of men and women in the tribes. The women are not subservient and, indeed, the accounts of fifty years ago maintained (what does not seem to be true today) that the women refused to eat with the men whom they considered their social inferiors. There was probably polyandry, that form of polygamy in which the woman has several husbands. (Compare Kipling's account in *Kim* of The Woman of Shamlegh with her many husbands whom she despised. Shamlegh is about sixty miles to the north.) A present-day manifestation is the

equal, if not dominant, role of the women—a fact which had significance in the clearing of malaria in the *terai*.

In 1947 the Uttar Pradesh State (corresponding to the United Provinces of pre-independence days) decided, in conjunction with the Indian Central Government, to open up the *terai* by grants of lands to ex-service settlers. It did not work. The reputation of the region was such that few ex-soldiers would face malaria. But the 'Grow More Food' campaign, to help to feed India's 350,000,000 continuously on the brink of famine, intensified the need for reclamation. India asked for international help.

In May 1949 the World Health Organisation sent in a team, supplied with DDT and equipment by the UN Children's Fund. As usual, the Indian authorities provided a 'matching' team of Indian doctors, entomologists and field workers, which was embodied in the international group. Also, the U.P. Government set up, in an adjoining district, an entirely Indian team. This is a commendable practice which has been developed in connection with UN demonstration projects because it means a spill-over of experience and techniques, a secondary training scheme and an extension of the perimeter of the project.

The difficulties which confronted the team were intimidating. The jungle conditions were bad enough but added to physical discomforts were tribal problems and entomological problems.

The malaria persisted throughout the whole year, with a slight abatement during July, August and September, because it was conveyed by two different *anopheles*, the one taking up when the other left off. Their habits were different and each had to be studied and attacked by different methods.

One was the *culicifacies*, which may have been the original conqueror of the *terai*. It is a pool-breeder and it does not depend on human blood for its survival; indeed it prefers cattle to man and therefore could persist in a region where the human population was small, but where human beings are handy it will turn to them and give them malaria. It is not a particularly sturdy insect and its life is short. It spreads malaria only by weight of numbers and if therefore the numbers can be sufficiently reduced the mosquito population will decline rapidly and, with it, the disease. But from the standpoint of

spraying with DDT it means that attention has to be given to the cattle-quarters as well as to the human habitations.

The other was *fluvialis*, a close relative of the *minimus* which was discussed in the account of the operations in Thailand. Like the *minimus*, the *fluvialis* breeds in running water and concentrates almost entirely on human blood, resting in houses.

Each had to be studied for its local idiosyncrasies before the methods of attack could be planned. And even before the problem of how to persuade the people to co-operate could be tackled, the doctors had to do what amounted to an anthropological survey of rites, customs and habits. Complications became obvious at once, because the tribes indulged in ritual plastering. At the end of the monsoon, or on the occasion of a death or an attack of smallpox, they would re-plaster their huts. It was a rite with hygienic virtues but made malaria-control difficult and expensive. Whereas in other parts, a spraying of DDT might serve for a whole year or, at the most, would be repeated twice, plastering over the protective residue at odd times would leave loopholes in the entire operation.

Custom, however, was no more awkward than the people themselves. The Tharus are less truculent than the Bhukas, who are a sullen, unfriendly tribe, but even the Tharus made difficulties.

When the WHO doctor first went amongst them with his platoon of sprayers, they refused to let him into their villages, much less their homes.

'Babujee, why do you come to kill us, the Tharus?' they demanded.

'Tharus!' replied Dr. Peter Issaris, the Greek, 'I come to give you life, not death. I come to kill the mosquitoes, not you. I come to save you from the fever.'

But the tribes which had remained remote and distrustful of all authority believed that the 'guns' were intended for them and not the insects. All this array, just for a tiny mosquito! Nonsense!

The resistance was broken down only by patience and largely by Nurse Elizabeth Pepper, of Chelmsford.

Elizabeth Pepper, a remarkable woman, regarded the 1,300 villages and the 2,600 square miles of the *terai* as a district

nurse, in her native Essex, might have regarded the rounds of her parish. Circumstances were somewhat different, of course. For one thing, the district nurse would not have to carry a tiger-gun, or ride on an elephant, or camp out among jungle-beasts, but she would have difficult patients too. And, in spite of their dark skins and their strange customs, the Tharus and Bhaksus were not just hostile or ungrateful people; they were like all those other distrustful people she had met in her career—the old folks, in England, afraid that the nurse was finding a pretext to take them off to the poor-house: the scared, unhappy victims from the concentration camps she had met at UNRRA, and the helpless, hopeless, self-pitying displaced persons of all nationalities she had tended in the refugee camps. People, Nurse Pepper would tell you, are very much alike and react or respond in much the same way. And, if she were to make anything of the Indian women whom she was training as nurses, it must be by example and by demonstrating understanding and not exerting authority.

So she made her way patiently into those villages barred against the sprayers. She did not argue or try to persuade; she just did things. A baby would have a painful sore. She would treat it with a salve, not vaunting to the mother that this was White Man's Magic or one of the new sulpha 'wonder' drugs. She might even discreetly mix it with the *kohl*, the mascara of carbon and ghee which Indian women put on children's eyes. It would just be a better *kohl* and it would help the inflamed eye. She would treat a wasting infant for vitamin deficiency, save a life with penicillin and quieten the tummy-miseries of another. She would not force her ministrations on anyone. She would just leave the leaven of her presence, sure from her experience that the next time she came, other mothers would come crowding round that she might do for their babies what she had done on the first occasion. And it never failed.

Soon she was treating the mothers themselves. And, remember, these women are the equals of the men. It was they who decided that the men with the spray guns should enter their villages and their homes.

And so it worked.

"Tharus!" said Dr. Issaris at the end of the first year. "Did we come to kill you?"

THE ATTACK IS LAUNCHED
Advancing in echelon, the tree-dozer's stumpers and bushknives level and clear the jungle.



THE JUNGLE IS TAKEN—The first harvest is gathered in the Himalayan range from India once the protective cover of the trees, the wild elephant and the mosquito.





MALARIA A patient sick of the fever is carried on a litter to the doctor. Sometimes three out of every five broadwomies are malaria stricken at the same time.

SUCOUR Nurse Pepper of WHO and her Brahmin colleagues treat

In the slums of Calcutta it is squalls destroy the rats harbouring the flea which carry plague to human. This is one of the few remaining plague spots in the world.

ENEMY Bengal children sap it the monster mosquito, a dragon

'No, babugee. You came to kill the mosquitoes. And the lice!'

Presently, those who were not in the scheme began to complain: 'Why do you not come to us?'

'Patience,' said the doctors. 'If you let us take a spot of blood from your babies, we will come presently and rid you of malaria.'

This meant taking blood samples from the non-sprayed districts in order to make clinical comparisons with those from the sprayed areas. This is essential in all those malarial-control schemes in order to give a proper scientific assessment and provide checks on the operations. But it is rather invidious because the people in the check-area get the pricks without the DDT—at least for the time being.

Having been through this jungle and visited some of the remote villages. I marvelled at the devotion to duty of those teams. In the dry season it was just possible to use jeeps over some of the area, but from experience of lurching along the jungle paths, splashing through streams, nose-diving over bluffs and steeplechasing over trackless ground, I know the saddle-sores and the bone-weariness which it meant. Sometimes they used hill ponies and in the wet season, which involved detours of hundreds of miles, they could use only elephants, still the one form of transportation which can crash and wade through the monsoon jungle.

But they achieved their end. In one district the malaria rate amongst infants, which had been 53.7 per cent, dropped in a single year to nil. In another it was reduced from 76.7 per cent to 2.6 per cent. The infantile malarial rate is the index of the effectiveness of the control. If a baby is not infected in the first year of its life, it indicates that there is no fresh infection of malaria, although in the *terai* cases of congenital malaria have been discovered—babies born with infected blood.

One could judge what malaria-control meant by the reception given to Dr. Issaris and Nurse Pepper by the people who three years before had dreaded and resisted them. They were given a boisterous welcome, with shouts and smiles and mothers bringing up their babies just for them to touch and to see how well they now were.

One form which the welcome took was to put on their tribal dance, with queer movements, strange music and weird

chanting. It was the story of the Hindu gods, and the central figure was a woman in a high head-dress and voluminous skirts and weighed down by heavy silver necklaces, a breast-plate of silver coins and bracelets and anklets. But the 'woman' had a black moustache! The part was taken by a man, another reminder of the curious social inversion of the sexes, by which, instead of dancing girls entertaining the men, skirted dancing-men entertained the women.

So much for what malaria-control has done for the indigenous people of the *terai*, but it is a bigger story even than that.

Working alongside the WHO teams were the experts from the Food and Agriculture Organisation, helping to clear the jungle once it had been rid of the tyranny of the mosquito.

Bulldozers, treedozers, stumpers, bushrakes and tractors were at work. The roar of the mechanical monsters and the rending crash of the trees as they tore them up scared the tigers and the other wild beasts and drove them deeper into the jungle.

Treedozers are ungainly mechanical pachyderms which charge a tree and topple it over. The idea is 'roots and all' but often the trunks snap off and leave the stumps. That is why there have to be stumpers, machines which do a kind of dental operation, dislodging the roots. The bush-rakes are machines which move in echelon, one behind the other at an angle, which has the effect of pushing the jungle debris to one side to form a windbrake.

The expert from the Food and Agriculture Organisation who had had experience of clearing the scrub for the East African groundnut scheme advised the Indians, when we were there, to try the chain method of clearance. This means disposing two powerful bulldozers about fifty feet apart and connecting them with a massive chain about 300 feet long, forming a V-loop. With this 'trawl' the bulldozers advance into the jungle, pulling up and tearing down everything between them.

One could see the great difficulties confronting the engineers. The machinery had to be heavy to do the job but much of the concealed ground was waterlogged or, more treacherous still, had a pie-crust of dried earth over sodden earth. The long-forgotten canals of the ancients would reappear as tank-traps

in which the machines would tumble. And, of course, there was always the dangers of the wild life, particularly the cobras and the vipers.

The heavy equipment for the clearance was provided by the Central Tractor Organisation set up by the Central Government and part-financed by the UN International Bank. This organisation sends its teams and equipment all over India. It is a non-profit-making organisation which 'hires itself out' to the various State governments.

These engineers also undertake the first deep ploughing, the turning over of this heavy jungle soil, and the rough preparation of the ground for the settlers.

But the settlers need other kinds of help. Their steadings need water and their fields need irrigation, but the mistakes of the past could easily be repeated. The natural drainage might again be interfered with by a wrong canal system or by the wrong use of diversion dams on the Ganges tributaries to flush-flood their fields. So the whole system of irrigation has to be carefully supervised. One way of reducing the hazards and improving the water-logged condition of the region is by using the underground water supplies for irrigation. Pump wells and artesian wells have been sunk throughout the area so that the domestic and farm supplies of water can be obtained, but they also have the value of gradually lowering the water-table so that surface saturation and marshy conditions can be reduced.

Conversely, the mistake might be made of drying up the *terai* by removing the forest cover which breaks the force of the monsoon rains and absorbs them, like a sponge, to replenish the underground springs. This would present the real danger of erosion and the desiccation of the soil. It would also drastically upset the balance of nature. It was comforting, therefore, to find that working with the engineers and the agronomists was an FAO expert on ecology. He is there to avoid the expensive mistakes which have been made all over the world, conspicuously in the North American continent and in East Africa, at the first onset of the groundnuts scheme.

The jungle region here extends over 1,700 000 acres. Mechanically, there is no reason why it should not all be cleared. We estimated that it cost £30 an acre to shift this

jungle, but cost would not be the real deterrent to making a clean sweep. In their wisdom, the authorities are agreed that only a fraction—certainly not more than half—will be exposed to cultivation. The rest will be left as forest, with even the wild animals conserved, in order that the balance be properly maintained.

There is no doubt that this is sound policy although the problem of jungle-beasts and settled cultivation, side by side, is a difficult one. Here the jungle is not neutral: it is consistently aggressive.

While we were there we could hear the drums beating in the night and see the rings of watch-fires being lit around the settlements to frighten off the herds of wild elephants which come out of the jungle, attracted by the new crops of sugar-cane. There is nothing a wild elephant loves more than sugar-cane.

The settlers appoint *chokidars*, watchmen to stand guard over their crops. The *chokidar* has his watch-hut within easy reach of the highest tree in the place, and when he hears the approach of the elephants he shins up the tree and beats a drum to alert the whole neighbourhood. The fires are lit and the settlers marshal with torches to drive off the invaders, which do far more damage by trampling the cane-brakes than by eating. These herds vary in size. One elephant sortie, during our stay, consisted of seven elephants and another of fourteen, but sometimes the herd may number forty. And to have forty living tanks charging, trumpeting and bellowing, is calculated to terrify the sturdiest settlers. The forest fences put up by the Government would have to be pretty solid stockades to stop the elephant.

Other marauders are the spotted deer, the blue oxen (*nilgai*), as well as tigers and leopards. But the biggest damage, apart from the elephant ravages, is done by wild boars. Although the authorities discourage the killing of wild animals except in self-defence, they have had to issue to the settlers licences for firearms for the purpose of frightening-off the intruders.

When the jungle is cleared, the land is allocated to the incoming settlers according to their ability to farm it. The basic unit is ten acres, which is reckoned to be what a family could

farm if ploughing with bullocks. If they can afford tractors, they can get bigger allocations, sometimes even a hundred acres. If, as is so often the case, the refugees have no bullocks nor any means of acquiring them, the authorities will tractor-plough the land for them and take a token payment in kind. After the first or second harvest, the peasant is supposed to be able to afford bullocks.

The test is ‘How much food can you grow?’ and to that end the peasants are encouraged to form co-operatives and pool their resources so that they can afford a tractor which they can share. They are also supplied with seed from the 10,000-acre State farm. For their first sowing they are (as already mentioned in Chapter Eight) given the seed at no money charge but, after the first harvest, return the quantity they receive plus twenty-five per cent.

The question of rent is largely up to the settler. He is not expected to pay any rent the first year. And after that any improvement—a new house, a new steading, fencing, drainage and so on—will defer any rent charge or reduce it to something entirely nominal. An enterprising farmer could sit rent-free for ten years or more.

Typical of how peasants can ‘make a go of it’ was the settlement I visited near Rudarpur. They had formed a village of twenty-five houses containing forty-four families. They were Punjabis who had first arrived in 1949 and had found paid work in helping to clear the jungle. By forming a co-operative group, they had acquired in 1950, 800 acres, averaging eighteen acres per family, because, in addition to incorporating their manpower and their bullocks, the women had sold their ornaments and their family valuables and the group had bought a tractor and plough equipment. From the pooled profits of two years’ harvests, they bought a second tractor.

At the State farm, settlers are able to see what modern agriculture means and the kind of equipment for which they might aim—tractors, deep ploughs, shallow ploughs, disc-ploughs, balers and combine harvesters. And the Punjabis are keen to adapt themselves, when they have the experience and can afford such things. Unfortunately, experience itself is costly because few of them have had any mechanical training,

although they have the aptitudes. The 'mortality rate' amongst tractors is high.

To reduce this problem the FAO sent in a Danish expert to help the Indians to establish workshops and repair plants and to provide training courses for tractor fitters and drivers.

But there was another solution . . . Elephants! The elephants which in Kipling 'let the jungle in' could be made to turn the jungle out. Harness and tackle were designed and the Indian saddlers and smiths made them, whereby the heavy ploughs and implements needed to turn-over the jungle soil could be drawn by elephants. Elephants do not rend their gears or blow their radiators.

Another Dane was provided by FAO to teach them how to handle small power-driven units on the farms and in rural industry. For electricity is being extended throughout the cleared jungle to power the pumps, provide amenities in the homes which the settlers are building with bricks which they themselves have learned to make, and provide heat so as to discourage the burning of cow-dung which is needed to fertilise the soil.

Simultaneously, a Dutch expert was sent in to advise them and train them in the tanning of hides and the handling of skins. This presents difficulties among strict Hindus who object to handling the skins of the sacred animals but there are sects which can and do, and so village leather industries can be established.

This emphasis on village industries whether it be brick-making, carpentry, saw-milling, tailoring, farm-engineering, tanning or canning is important because it lays the basis of a sensible rural economy. It corrects one of the causes of poverty and hunger—the trouble caused by too many people on the land. There must be means of drawing off the surplus population so that the family plots are not continually fractionated by sub-division within the family until there is not even adequate subsistence nor any possibility of improving agricultural methods because of the smallness of the farm-units.

In India there are many difficulties in this process of shifting peasants to artisan activities because of caste. A peasant may

be starving but he still regards himself as of higher caste than the trader or the craftsman no matter how prosperous they may be—just as a low-caste wealthy man may employ a high-caste Brahmin cook, who would deign to prepare the food but would refuse to eat it at the same table as his caste-inferior.

I had a personal instance of this in the *terai*. I had, as my interpreter, a Hindu laboratory-assistant. He was painfully deferential and embarrassingly obsequious, but I noticed that when we were standing talking in the sun, he would back away and move around me and when, in a normally friendly way, I asked him to have a cup of tea out of our flask, he salaamed and cringed but declined. I was worried by this excess of servility until a doctor carefully explained to me that this poorly-paid assistant was in fact a Brahmin, who (of course) could not eat in my company or drink from a cup which I had handled, and that when he was backing around me he was keeping out of my shadow which, if it fell on him, would defile him!

No individual can take up an 'inferior' occupation (like turning from peasant to artisan) without becoming an outcast, but this can be overcome by a whole sub-caste changing over its occupation. An extreme example is a caste which is so strict in its refusal to take life that it will not even 'kill' the germ-seed of a plant but, since their richest cash-crop was in fact oil-seed, they formed a sub-caste which could crush the oil-seed. Or the example in Orissa where a sub-caste has taken upon itself the 'sin' of killing the devastatingly sacred monkey.

These kinds of difficulties are a great strain on international experts, if they insist (as they should not) upon being strictly rational and regarding it all as stupid and ignorant. It is, however, no good being impatient. The Hindu Code, introduced by Nehru, is trying to remove some of the social abuses of the caste-system and in the end it will succeed, but it will take time.

For instance, there is the problem of 'The Sacred Cow'. In India there are over 200,000,000 cattle which eat a great deal more than the 350,000,000 people and give no meat and very little milk in return. A vast proportion of the cows are diseased and spread disease. . . is revolting to the outside observer to see poor decrepit beasts dying miserably of old age or disease, yet

no one can put them out of their misery. It is absurd to see them blocking pavements or lying across tramlines or holding up whole streams of traffic in busy cities but still having to be left to exercise their 'freewill'. But, after all, Gandhi, the great social reformer, said, 'I yield to no one in my worship of the sacred cow!'

All this is tied up with the problem of education, and the clearing of the jungle of the *terai* shows how necessary it is for technical assistance to be a 'Combined Operation'. The doctors move in and remove the dangers of malaria; the agricultural specialists go in to increase the acreage, improve the methods, tackle the plant and pest diseases, supervise irrigation and mechanisation and try to create rural industries; both can go so far by the co-operation of the population if it is intelligent though ignorant (and one gets very angry with those, including some technical assistance experts, who should know better, who confuse ignorance with lack of intelligence); but for the greater advances education is necessary.

In the *terai* the demand for education far exceeds the facilities available. The village schools, where they exist, are extremely primitive, badly staffed and overcrowded. Malaria control is partly responsible for the overcrowding because whereas in the past at least a third or even half of the register was consistently off sick with the fever, now there is practically full attendance.

Schools are being improvised out of old religious buildings and even out of animal sheds, but the classes invariably overflow into the schoolyards and, with no great hardship under the Indian sun (but not under the monsoon rains), the children are taught beneath the shade of the peepul-trees.

One healthy sign is to be found among the energetic Punjabis, who have extended their co-operative principles in the settlements to include the hiring of itinerant teachers to provide the education they avidly desire for their children.

In the town of Haldwani, the centre of this region, the population increased from 10,000 at the 1931 census to 30,000 in 1951. There is one secondary school with 720 students and thirty of a staff, including manual assistants. About sixty per cent of the children come from the town itself but the others

come to school through the jungle from the settlements. But they come regularly, so great is the urge for schooling.

The average pay of the teachers, who include graduates with good degrees such as M.A., M.Sc., M.Comm., B.A. and B.Sc. is less than £10 a month. The Government contributes about £1 a year per head of the school-register; the municipality about ten shillings per head; and the children pay a rupee a week. On such a 'shoe-string' the main centre of academic education for this rapidly developing region has to function. Inevitably, the equipment is poor and we saw the science-teachers trying to give 'practicals' to their bearded boy-students, with primitive physical and chemical facilities.

As a result of our visit, Unesco arranged for this school at Haldwani to be adopted under the International Voluntary Aid Scheme by which more fortunate schools and scholars throughout the world can help to provide equipment, and take some part in this great and hopeful enterprise of clearing the jungle, not only of tangled vegetation, but of ignorance.

For the jungle really is in retreat, and the *terai* is typical of other vast areas of India and South-East Asia which can be opened up to help to feed the multitudes. Always we are reminded that there are 350,000,000 people trying to live on 250,000,000 cultivated acres in India and that, 'Three into two just doesn't go'. We have seen, in Chapter Eight, how the constant threat of famine, implicit in these figures, can be changed by plant-breeding to get greater yields from existing acreages. But we should also be reminded that of the land-surface of India only forty-three per cent is in fact under cultivation. Of the remaining fifty-seven per cent, at least part is jungle, abandoned, or forgotten as possible arable land, because of malaria. In Bombay State, in Mysore, in the Jeypore Hills and in Bengal, whole tracts of jungle territory have been liberated from the malaria mosquito and can be reclaimed as the *terai* is now being reclaimed. Remember, too, that these are only 'demonstration areas', chosen to show what can be done in the anticipation that the demonstration will be extended to new areas.

When I came back from South-East Asia, I was asked what

had been my most moving experience. I found it very difficult to decide whether it was seeing the smile which broke over the face of a jungle mother when she was told that her baby's life had been saved by penicillin, or the sight of the heavy plough breaking the black soil of a thousand-year-old jungle—soil to help to save the lives of millions of children.

Tabinda

WEST PAKISTAN

TABINDA was nineteen and very lovely. Babanda claimed to be one hundred years old and was as ugly as a witch. Like characters in a fable, these two were wrestling together for the lives of the mothers and infants of Pakistan. Behind Tabinda were the new forces of enlightenment: behind Babanda were dark superstition and black arts and spells and potions. One was the trained midwife: the other was the 'dai' or traditional midwife.

Babanda lived in the dim, cave-like, recesses of a back-street hovel in Lahore. It just needed the flapping of bats' wings and the spitting and mewing of cats to complete the picture. There she crouched, a toothless crone, her white hair, turned yellow with smoke and filth, hanging in wisps about her eyes. On a leaf, on the filthy clay floor, she was mixing a concoction for child-bed fever. She sneered at modern hygiene and cackled her lying boasts—like the one of how the arm of an infant had presented itself first and how she had touched it with a live ember, so that the baby instantaneously withdrew it and, taught its lesson, arrived normally five minutes later. She croaked her ill-will towards girls like Tabinda—shameless hussies affronting the Prophet by going around with naked faces.

Presently, with much spitting, cursing and complaining, she got up from her squatting position, gathered the concoction into the leaf and pushed it into the folds of her dirty sari. She looked around in the gloom and found a sliver of bamboo on the floor—the 'knife' which would cut the umbilical cord. She grabbed her stick, called a little, cringing girl and, leaning on her and her stick, hobbled out into the sunshine. She was on her way to her next confinement, carrying with her the germs of her own filth and her last case. The mother was (as she boasted) a wealthy woman, but she was to be exposed to the

ministrations of this noxious, lethal Sairey Gamp, the traditional midwife. If the baby lived she would get her reward, (She herself was reputed to be miserly rich.) If it was a boy she would get more than if it was a girl. If the baby or the mother, or both, died—*Kismet*—it would be ‘Allah’s will’ not Babanda’s fault.

Tabinda was the daughter of a Moslem intellectual who had acquired three of the four wives allowed him by the *Koran*. By his second wife he had begotten Tabinda and an elder sister, but when he married a young girl as his third wife Tabinda’s mother had revolted. She had insisted on breaking *purdah* and giving her daughters the advantages which segregation had denied her. The elder daughter she sent to be trained as a doctor at the Fatima Women’s Medical College, Lahore, and Tabinda elected to be a nurse.

When she arrived at the training school which was staffed by the international sister-tutors of the World Health Organisation and equipped by the UN Children’s Fund, she wore a black *burqua* or hood which covered her head and face and through the lace visor of which she glimpsed the world. And when she raised her *burqua* for the last time and unveiled her beauty, it was a symbolic act. She was not merely joining a sisterhood of nursing but a community of pioneers. For she was among the first of the few who are fighting the battle of emancipation for the women of Pakistan.

Before partition, when Pakistan separated from India, the nurses were mainly white girls, or Christian Indians. Among the Hindus maternity work was regarded as ‘pollution’ and the midwives as less than the Sweepers. Among the Moslems *purdah* operated, with its segregation, which meant that no adolescent or adult woman should show her face to any man except her husband (and to him for the first time on the bridal night). So women were kept out of professional life and out of such things as nursing and doctoring.

Those things are changing rapidly in Pakistan. The violent surgical operation of partition, and the upheavals with which it was accompanied, meant the ‘bleeding’ of what was to be Pakistan of the majority of the professional classes and it meant, too, the transfusion of millions of refugees. The results were

incredible human misery. Refugees arrived wounded, without food and without clothes. The nursing services and the relief organisations had to be improvised. Then, for the first time, the hidden women of Pakistan really emerged. Women who had never had a chance of mixing in the community or doing any social work, rallied to the help of their suffering woman-kind. Although they had no training, they volunteered in their thousands—mothers, grandmothers and daughters, went into the refugee camps. Another section formed a para-military organisation in which they were drilled for fighting and for self-defence. A nursing service was started on a voluntary basis and the emergency service has continued as part-time regular help in hospitals.

Then a college for women doctors was opened in conjunction with the Fatima Hospital in Lahore, where 260 women are in training for their degrees in medicine. This perpetuates what by Western standards is an anomaly—male doctors cannot treat women nor women doctors, men. So there has to be a double medical service. A full-time nursing service, on the same basis of separation, had to be built up.

Into this situation came a remarkable, white-haired Scots-woman, Dr. Jean Orkney of Montrose. For twenty years she had been serving the women of the sub-continent. For a time she was a headquarters medical officer attached to WHO Regional H.Q., but her interests were always 'in the field' and she chose to go into the West Punjab to undertake the enormous task of creating a Mother and Child Health Service, without outraging religious susceptibilities.

With her international team of women she moved to Lahore. Lahore is the capital of the West Punjab. It should have been the capital of Pakistan, but with the Indian border only eighteen miles away it was considered strategic to move the seat of government to the less-historic Karachi.

Lahore, where Kim 'sat in defiance of municipal orders, astride the gun Zam-Zammah, on its brick platform opposite the old Ajaib-Gher—the Wonder House as the natives call the Lahore Museum', and where the urchins of the city still clamber on Zam-Zammah and where the bazaar is still the same colourful, seamy place which Kipling knew.

There, under the glittering cupolas of the great mosque, Dr. Orkney set up her nurses' training school, to which Tabinda, and many like her, have come with downcast heads masked in their black hoods.

'Before we can teach the Pakistan women to help themselves,' said a distinguished Pakistani doctor, 'we must teach them to walk erect.' What he was saying, discreetly, was that they must be taught to discard the *burqua*, which condemns them to keep their eyes on the ground.

Tabinda 'walks erect'. From the moment of her entry she remained unveiled. She was trained in the wards; she was given the servile tasks of the probationer; she was given classes in which she was 'taught the facts of life' and such things as nutrition. She was trained to deliver babies without risking the lives of mothers by exposing them to the infections which her own immaculate presence and her new knowledge of hygiene would discourage. And when she was thoroughly trained she went out with others into the villages among the hooded women, who were as indignant as Babanda at the shamelessness of the barefaced nurses. But they learned that she and her like could help them and succour them and, with that first breath of the new independence of women, they too began to feel that the *burqua* was a badge of servitude and to discard it.

One of the biggest obstacles were the untrained *dais*, the traditional midwives like Babanda. First, they could neither be disbanded nor disqualified because their role was time-honoured, and because until there were enough of the new-type nurses the authorities had still to rely upon them. Secondly, they could make mischief and whip up resentments against those white uniformed intruders (still with their 'harem trousers') even to the risk of having them stoned by the Faithful. And thirdly, they were not all as bad as Babanda.

There were some of them like Alla Raki. Alla Raki was poor, young, illiterate and cheerful. She was one of those natural nurses who work for the love of their fellow human beings. She was delighted to work with the international team.

With Tabinda, Miss Mubarik, a qualified Pakistani public health nurse, Miss Montgomery from New Zealand, one of the WHO team, and Alla Raki, I went to visit 'The Burning Ghat'. This was the place where the Hindus cremated their dead and

which had now become a village of Moslem refugees. In the place of death, people live. Around the walls and on the site of the old funeral pile, they had built their clay and wattle huts. Squatting on the ground they plied their various trades and baked their *chappatis* on burning cow-dung. Children were playing on the trodden ashes of generations of cremated Hindus and in these ashes babies were born—and died. Death and life jostled each other here and the umpires of life and death were the *dais*.

In this place of ill-omen, Alla Raki lived. Her home was a *stupa*, like an inverted hand-bell, the chapel of a Hindu god. She had called the nurses to her daughter—a child-mother who was having her first baby. The *stupa* was dim and airless, lit only by the shaft of sunlight from the open door. But Alla Raki had seen that the clay floor was carefully swept and covered with papers. Primitive ante-natal preparations had been made and there was plenty of hot-water (not usually prescribed by the *dais*) which neighbours were industriously boiling on fires around the great bo-tree in the temple courtyard. Alla Raki, who ministered to other mothers, was only too willing that modern medicine should minister to her daughter.

The delivery was without complications and Tabinda's job was, with great cheerfulness on both sides, to indoctrinate the young mother in child-care. One of the things she must contrive to stop was the ritual shaving of the baby's head which takes place after fifteen days and which accounts for the scabs and scars and abrasions—and deaths. For the ritual is careless and not too clean and any cut in that germ-laden death-redoubt would cause serious infection.

Alla Raki was not an exception. After avoiding any contact with the new generation of nurses and their foreign instructors, the *dais'* curiosity became too much for them.

'At first, we made all the approaches,' said one of the English nurses. 'We would find out where they lived and go and call on them. But they would always be missing. And then we would find, when we were walking to some case, that a strange woman was walking alongside and would hang around until we made conversation and then it would turn out to be one of the *dais* for whom we had been looking. Usually, they made

some pretext or other—asking our advice about one of their cases and getting us to go along for “a second opinion”. And then they would invite us to their homes. And we would give parties for them.’

Out of this relationship grew a successful scheme for training the traditional *dais*. The Government invited them to register and offered a ‘scholarship’ of fifteen rupees a month to those who would regularly attend at classes taught by the Pakistan nurses working with the international team. (Notice the inversion. That is how it should be. The WHO personnel is only there to advise and the initiative must appear to lie with their Pakistan ‘opposite numbers’.)

At first the *dais* came prepared to scoff. What could these young women teach them who had delivered probably thousands of babies? But they stayed to listen and to learn.

‘Mrs. Chase’ probably influenced them most. Mrs. Chase is famous all over the world. She is not human: she is a plaster model of a woman, which divides up into sections and has all the apparatus for showing such midwives what actually does go on in the process of childbirth. ‘She’ is supplied by the UN Children’s Fund. With the example of Mrs. Chase before them, they began to understand why many of the practices which they used were harmful. Then they learned about hygiene and the invisible death which lurked in the dirt of their hands and their clothes. They might be illiterate but they were teachable, and out of this ‘partnership’ of the old and the new came a healthy respect, in place of resentment, for girls like Tabinda.

Tabinda, her vivid face uncovered, her head erect, was one of the new women of Pakistan whose example will inspire the thousands who are needed in the villages of Pakistan.

This is more than just treatment and care. It is a great liberating, educational movement.

‘Teach a man,’ said the Begum Liaquat Ali Khan, widow of the assassinated Prime Minister, when I saw her in Karachi, ‘and you teach one person. Teach a woman and you teach a whole family.’

She is one of the leaders of the movement to emancipate the women of Pakistan from subservience and *purdah*. How (she argued) can the country prosper and develop when half



ABINDA, the purdah-sil who unveiled her face holds the baby of the new generation which she and the emancipated women of Pakistan are training to serve.

POWER SENSATION which will bring into cultivation 2,000,000 acres of desert. It will consist of 110 spans producing electricity and supply every city which is being erected.





BLACK GHALGOLA The woman with the child did not want to be photographed because she was ashamed of the black hood in which Afghan women have to hide their faces.

KABUL, AFGHANISTAN. But the cow
wasn't alone. The
whole crew tipped it
over to Nut. — Child
Line Photo



ANTI-typhus This hold-up at the point of the spray gun was part of the anti-typhus campaign in which the tribesmen had their clothes and hands doused with DDT.



its population, the women, are excluded by custom from participation in the economic and social life? How can it become a really great nation if only one per cent of the women are literate? And she is doing her utmost to bring women into every sphere of activity.

Their help is urgently needed because Pakistan is desperately in need of professional and technical people. This new country, at the time of partition of the sub-continent, found itself deficient in experts in almost every field of activity and turned to the United Nations for help.

It received it, on such a scale that it eventually acquired the biggest technical assistance mission in the world. And its requests were so multifarious as to seem almost haphazard. 'Training for handling and maintaining heavy equipment. . . . Establishment of an Institute of Geophysics and Astronomical and Astrophysical Laboratories . . . Construction and planning of slaughterhouses. . . . Very High Frequency. . . . Model Satellite Town.'

Geodesy, terrestrial magnetism, seismology and atmospheric physics are erudite subjects which may seem remote from the urgencies of economic improvement as implied by technical assistance but, in the case of Pakistan, geodesy and terrestrial magnetism means the training of personnel to discover the still unknown natural resources of the country. Baluchistan is in the earthquake belt, so the Pakistanis must know about seismology. Much of West Pakistan is an arid zone, dependent for its water, its food and its cash-crops on the flow of the Five Rivers; thus atmospheric physics means the study of the possibilities of cloud precipitation. Four Unesco experts were sent in to work on and to set up training organisations for these subjects.

At Karachi Airport we saw another UN service at work. Karachi is one of the great international transit ports, but Pakistan also has to develop its internal air communications, not only to cover the long distances in West Pakistan but to link it with East Pakistan a thousand miles away. So it must train its people for the expansion of its services. ICAO—International Civil Air Organisation—provided experts in air-traffic control, radio and radar systems and other aspects of

air communication. We 'went to school' with the Pakistanis at the new training centre.

Why should the Pakistanis be interested in Very High Frequencies? For the simple reason that they want to take shortcuts to modern communications. The telephone and telegraph systems are needing extension, but to lay landlines over the vast and difficult terrain would mean enormous efforts, delays and costs, but using the radio-links with a network of Very High Frequency stations could provide a quick solution.

The country most urgently needs to develop its industries and to reduce the pressure of the population on the land. Refugees have to be re-settled and put to productive work. That means it must produce more skilled workers, a better-organised employment market, efficient cottage industries, handicrafts and co-operatives. To help to provide those, the International Labour Office has provided experts who are advising on the setting up of vocational training centres and on the organisation of employment exchanges and the creation of country co-operatives.

The range of requests to the United Nations Technical Assistance includes provision of experts on 'rural under-employment' (which means that the soil can give employment only to seasonal labour and some means has to be found of keeping hands usefully employed): problems of land tenure; industrial welfare; training of government employees of all kinds; land reform and re-settlement: teaching and training in basic medical sciences; underground water-supplies; fundamental education; schools broadcasting and general programming on radio; cement production; and the setting up of DDT and penicillin factories to make their health projects self-sufficient.

Under the expanded programme of technical assistance, the World Health Organisation, in addition to Mother and Child Health and the activities of Dr. Jean Orkney and her team, set up tuberculosis treatment and training centres at Karachi and Dacca, and the Children's Fund helped to establish an institute at Karachi for the production of B.C.G., the tuberculosis vaccine. There were malaria control schemes in West Punjab and East Pakistan and a venereal disease and cholera control project in the Ganges Delta.

The Food and Agriculture Organisation met demands for experts in different methods of farming and animal husbandry, rinderpest control, soil conservation and reclamation, river surveys, prevention of soil erosion, fisheries and soil-mapping.

Requests to the Technical Assistance Administration included help in the improvement of iron and steel manufacture; manufacture of surgical instruments; design, construction and powering of small craft; highway construction and the building of grain elevators.

In addition of availing itself of UN help, Pakistan has extensive schemes under the Colombo Plan, which is not only helping to finance and equip but is making technical experts available. The Conference of Commonwealth Ministers in London heavily endorsed the schemes for the development of the Thal and Sind deserts. Help is being given under U.S. Point Four. Furthermore, the Pakistan Government called in Lord Boyd Orr, former Director-General of the Food and Agriculture Organisation, as chairman of a twelve-man commission on the organisation and development of the country's agriculture.

Spelled-out like this, Pakistan's programme would seem rather a rag-bag and ramshackle. On the contrary, all these are parts of economic planning in which, again, UN experts have played a big part. The late Tom Hibben, the Resident Technical Assistance Representative, for whom, on my visit, I developed an admiration and respect and who died at his post in Karachi, set the pattern. He acted as economic adviser and sat with the Planning Board, co-ordinating the various forms of external help and relating the details of the technical assistance programme to the long-term and short-term needs of the country.

The problems are vast and urgent. Pakistan is a country living on borrowed time and borrowed water. It is an artificial creation based entirely on religious considerations, which could produce the geographic, economic and administrative absurdity of having the segment of the Ganges Delta, East Bengal, separated from the greater (in size, but not in population) part of the State by 1,000 miles of India.

It includes the best part of the Punjab, the country of the

Five Rivers, but even there it is hostage to outside circumstances. The struggle which raged over Kashmir was not entirely one of religious or even political considerations—whatever the protagonists may say—but largely one concerned with the source of the waters which are the condition of West Pakistan's survival. The Indus, the Jhelum and the Chanab all derive from Kashmir, while the Ravi and the Sutlej come from India proper.

The Punjab is probably the richest land in either India or Pakistan, but the fertility of West Punjab (Pakistan) and East Punjab (India) is entirely man-made, sustained by a network of thousands of miles of canals, which have converted 22,000,000 acres of desert into highly productive soil.

This was the result of work begun eighty years ago and this irrigation system, the largest in the world, is one of the lasting testaments to British rule of undivided India.

Partition cut right across this system. Something like three-quarters of the irrigated land went to Pakistan but the system of headwater control remained outside the country. The sharing of the waters became a cause of bitterness between Pakistan and India, and while efforts have been made by both sides to try to keep the issue amicable, tensions were bound to recur. This certainly was true as when in the season 1952-53, owing to a failure of the rains and a reduction of the flow of water from India (itself facing a famine situation), the crops wilted and died in the fields and Pakistan which had been exporting wheat itself became an importer.

But even if there were no failure and the waters were running full at source, it is clear that the Indian projects in the Sutlej, including the Bhakra Dam and the intention of irrigating another 4,000,000 acres of desert in the East Punjab, will make a heavy lien on the waters which Pakistan has to share. The Bhakra Dam, which is expected to be finished by 1958, will be the highest dam in the world and would be capable of storing the entire waters of the Sutlej for a year. On the same river a large barrage or weir at Nagal and new headworks at Harike and Rupar all relate to the waters which Pakistan wants lower down.

In this situation, both India and Pakistan agreed in 1953 to a technical mission, sponsored by the UN International Bank,

and manned by Indian and Pakistani engineers under the chairmanship of an American. This arose from the proposals of Mr. David Lilienthal, one-time chairman of the Tennessee Valley Authority, who in 1951 toured the Indus region and was appalled at the wasted water which in the times of high flood, during the monsoon, drowning low-lying tracts but pouring, as to four-fifths, into the sea. The object of the mission was to work out, with prospects of international help, schemes for conserving that water for the benefit of both parties.

Given a settlement, the lands of the Punjab, both East and West, and the Sind are capable of even greater productivity. Pakistan, in the Thal desert, had made remarkable headway.

And there is the Kotri Barrage which I saw under construction in the Lower Sind. This is a great enterprise, a barrier being built across the Indus, about 100 miles from the sea, and about the same by road from Karachi, the capital.

Standing on top of the massive masonry of one of the spans, we looked out over a depressing landscape. Stretching to the horizon on all sides was the drab, tawny desert, dead flat except for a few low table-topped hills which only emphasised flatness. There was practically no vegetation, except clumps of camel-thorn and a few stunted trees. The Indus itself was a depressing sight because it was at low-water and consisted of a lot of lazy, branching streams, crawling round massive sand-banks. This, one would have said, was a Land of Forlorn Hopes.

It certainly took a lot of imagination to see it as a land of flourishing farms and well-cropped fields, as the experts assured us it would be one day. And they reminded us that most of what is now Pakistan was once desert like this. In the past the rivers had flowed through the Thirstland without slaking its thirst, and then great schemes like the Sukkur Barrage, the world's biggest, farther up the Indus had watered the Sind Desert and made it flourish as the Punjab had done.

That is what will happen in the Lower Sind Desert when the Kotri Barrage is in full operation.

The Kotri Barrage was undertaken as a Pakistan Government enterprise using direct labour. It had the services of British engineers but they were not contractors. And the Pakistani

engineers who showed us over the site were proud of the fact that, breaking with the tradition which used abundant cheap manual labour, they had brought in the latest and most modern equipment for barrage construction. They took pride in showing us the giant machine, the arm of which towered 200 feet above the bed of the river (and which Eric in sheer bravado insisted on scaling). This handles the giant scoop which lifts tons of earth at a bite. Moreover, the machine walks! It was like a fantastic Walt Disney cartoon to see the enormous monster lift itself on its enormous flippers and fling its power-house, belly-flat on the ground, and lift it again, like a portly old gentleman doing his exercises, and flop again. It moved forward with this ungainly motion.

They showed us the crushers which break up the sandstone rocks for mixing with cement in the 'pumpcrete' machine. This electrically driven apparatus forced the liquid concrete through pipes, like squeezing a tooth-paste tube, and all it needed was a couple of men to direct the nozzle of this hose into the masonry casings of the barrage.

But the modern engineers had fortunately not entirely abolished the picturesque. Trains of donkeys with panniers picked their way through the modern equipment into the more inaccessible parts where the mechanical monsters could not go.

The barrage consists of 445 spans, compared with the 665 spans at Sukkur: each span is 60 feet. It has been built in sections, a great earthwork enclosing each section, diverting the river and forming an enormous caisson within which the structural work proceeded. As each span was completed, a similar earthwork protected the work on the next span and the previous bund was broken to provide a new channel for the river.

It is not intended as a storage dam but as a weir, which diverts the water into irrigation canals on either side of the Indus. An electricity generating system is incorporated.

According to the plans, 2,000,000 acres are to be brought into cultivation by the Kotri Barrage. Once again the services of international experts were enlisted to do the surveying and mapping of the soil, studying its nature and foreseeing the problems. They advised on drainage and the tapping of underground water supplies.

We went out into the desert with the FAO soil-expert. The area here is not only dry but the soil is salted; I was confidently assured, however, that with enough water and with proper draining it will be possible to leach—or wash—the salt out of the soil.

To prove it, Le Vee, the FAO soil-conservationist, asked me to sniff the sunset air. It was pretty powerful but I was mystified. ‘Why does it smell of spring onions?’ I asked him. ‘Because it is spring onions’, and he led me to a strange oasis in the desert, where a Sind peasant had sunk a well and had used the water to scour the salt out of the soil and produce a fair-sized market-garden with vegetables—including spring onions.

We inspected a desert section of 10,000 acres which will be irrigated by water from the barrage. The soil had been mapped and classified by FAO. Some of it was covered with a crust of salt as crisp as a meringue. The soil looked pretty sick and unhealthy to me, but Le Vee assured me that it was not sick but just sleeping in a kind of cataleptic coma; it was soil in a trance from which it would awake brisk and lively when it was irrigated.

To prove it, he took me into what he called ‘one of his classrooms’. It was out in the middle of a bleak stretch of desert and it was just a pit dug in the ground to show Pakistani agricultural students what a cross-section of the soil of this area looked like. He convinced me that surface appearances were deceptive and that there was a depth of good soil.

But agriculture is only one aspect of what is to be done as a result of the Barrage. Between Kotri and Hyderabad-Sind (not be confused with the city and state of that name in India) they are planning a city of 100,000 people, a city of crafts, trades and industries, powered by the barrage and fed by the desert. Originally the scheme was to provide homes for thousands of Moslem refugees from India, most of whom were craftsmen, traders and artisans. But the Pakistan Government wisely decided that it would be a mistake to have a refugee colony and planned it as a model city which would be a cross-section of all classes, professions, trades, industries and interests.

Almost every aspect of it has been made subject of advice from the United Nations. The international services asked for

included experts on town-planning; social-planning; selection of representative families and groups; welfare-services, employment and settlement. Technical experts included those concerned with sanitary services; water and electric supplies; housing; education at different levels; public health, health education and curative services; vocational training; industrial safety; occupational hygiene; job-counselling and employment recruitment; the choice of suitable industries; the design and organisation of industrial plants and the setting-up of industrial co-operative societies.

All the specialised agencies of the United Nations are involved in one way or another in meeting these requests by which the Pakistan Government is seeking, with the combined experience of world experts, to avoid the mistakes and tribulations which beset the industrial revolution in the West and which have always been magnified by intensive and rapid industrial expansion.

That was why I suggested that this new city of the Sind might be called 'UNOBAD'.

Shardri

AFGHANISTAN

WHY did no one ever warn us about the Lataband Pass? As we had advanced throughout South-East Asia, whenever we wanted to take our minds off present dangers or jungle discomforts, we had threatened each other with the Khyber Pass. 'Just wait . . .' we had said and had conjured up all the hazards of that 'grim defile' of the history books and the North-West Frontier novels, where, to the natural menaces, would be added those trigger-happy tribesmen, sniping from the rocks.

But none of us had heard of the Lataband. . . .

When we arrived at Peshawar, we were jubilant and, in spite of the early hour, we toasted our success. We were pleased because Afghanistan had always been marked 'Doubtful' on our itinerary: we had never been sure whether we could do it in the time. But, by working and travelling seven days a week, getting up before dawn and continuing far into the night, giving ourselves no respite and, fortunately, avoiding any serious delays through sickness, we had kept to our schedule. And now we were ready to cross the Khyber and venture into a country as remote in history as it is in geography, a country which few have the opportunity—or the excuse—to enter. We were quite reckless about our prospects when we got there—including the warning that the snows were due and might block the passes and trap us in Afghanistan for months.

We made our preparations for a different kind of adventure. As any teacher will tell you—and as Eric kept on telling us—we were moving out of South-East Asia and into the Middle East. We were bound for higher altitudes as well as higher latitudes and leaving the monsoon jungles for the desert plateaux. So we changed into warmer clothes and left, at the

Peshawar hotel, our travel-stained, jungle-tattered tropical kit, and also those luscious, dove-grey, shark-skin, natty gents' suitings which Herb and I had acquired in Bangkok and which Eric said made us look like jazz-band leaders. He scorned those suits and resented them and no edicts or remonstrances of the *chef de mission* could persuade him to get one. I had always insisted that it was not weakness but tact on our part. It was true that we had all agreed that there were to be no formalities nor social-occasions on the trip and advice to that effect had been sent out ahead of us. But we soon discovered that protocol and Asian hospitality could not be ignored without serious offence. And we could not very well present our credentials to Ministers in bush-shirts and shorts. Hence the shark-skins which we were now abandoning.

The transport in which we were to cross the Khyber had come down, overnight, from Kabul and we had all the difficulties of clearing the Afghan driver with the Pakistan authorities. And we had to go to the caravanserai to collect a shipment of goods. This should have forewarned us that the Khyber was not what it was in the days of Kipling and the Bengal Lancers. Where were the camels and the red-bearded horse-traders? There were plenty of tall, wiry, sniper-eyed frontier tribesmen around, but they were wiping grease off their hands or poking into the entrails of the heavy motor-trucks which ply through the Khyber. This carrier traffic is a monopoly of the Khyber Union, a co-operative of tribesmen—an arrangement which has an insurance value, since all the tribes have a stake in seeing that the convoys get through safely and without interference.

But our goose-flesh illusions persisted as far as Jamrud, the Pakistan control post and garrison-centre at the entrance to the Pass. Our papers were checked, and now we were in the Khyber.

Perhaps it was the bright sunshine which completed the disillusionment. Where was the 'grim defile'? The mountains rose from a broad valley, a sunlit Shangri-La which, on that crisp, cloudless day, even the forts and watch-towers could not make sinister.

The wide, smooth-surfaced military road climbed up the mountains in a series of well-cambered curves. A railway-line

ran on a different level, disappearing into tunnels, while on a third level was the track for the camel-trains and horse-traffic. It was all so suggestive of 'parkways' and 'fly-over crossings'.

On one ridge, we stopped outside the massive citadel which dominated the valley for miles. On another ridge, Eric got out with his camera. The Afghan driver silently pointed to a look-out post within rifle range on the other side of the valley. There was no sign of any rifle but the driver was reminding him that the Pakistanis forbid any photographs within the defence system of the Khyber. And on another hillside we found another reminder that the Pass is, or was, not always as quiet as we were finding it. It was covered with memorials to the British and Indian regiments who had fought and died here in the frontier wars.

At Landi Kotal the road carried us above the *serai*, in the open courtyard of which swarmed the tribesmen with their families and their camels, and from this 'dress-circle' we could see the pageantry of the Pass, from which traffic arrangements had contrived to separate us. Eric 'beefed' because we had not been able to mix with them so that he might have got pictures (forbidden, anyway) of tribal life. He was to regret his regrets presently.

The thirty-five miles from Peshawar to Torglum, the frontier post at the end of the Pass, took as long to cover as--well, any thirty-five miles of good tarmacadamised road takes in a fast car. But any time we had saved was more than expended in the frontier formalities.

Only a chain slung across the road provided the barrier, but before that chain was dipped to let us through we had spent hours in clearing our papers. There was no hostility or truculent officialdom. But Eric did not see anything comic in it. He collected all our passports and went off to see the 'boss-man', only to come back later much subdued and said that the 'boss-man' wanted to see us. We went through the room where the truck-drivers were arguing with the local officials and into a garden. Seated on the terrace, sunning himself and leisurely killing flies with one of our passports, was a man as fat as a Chinese image. He shook hands with us without getting up and signed to us to sit down. Then he shouted to a bearer to bring us some tea. He was very genial and conversational. Indeed,

we were probably just relieving his boredom. If he was 'vetting' us it was an aimless sort of interrogation. He admired our *laissez-passer*, that impressive United Nations' document in Chinese, Russian, French, Spanish and English enjoining him and his like to 'facilitate by all suitable means our journey and mission'. He thumbed through the pages of our passports, asking for a geography lesson on all the countries we had visited. He was interested in our radio-recorder and the marvels of modern science. And then he picked up the rubber stamp, only to find that his ink-pad was dry. He hollered for another, stamped our documents and then picked up his pen to initial them, only to find that his ink-well was dry. So he speared a fly with the nib and hollered again for the bearer. We thought it was to get ink but it was to get more tea for us. The ink could come later. . . .

Eventually, like a reluctant host, he let us go. As Eric said if this was typical of what was ahead of us, we would certainly get snow-bound.

The chain dipped and the Afghan guard saluted. We were in Afghanistan, and out of the Khyber Pass.

'But we still have the Lataband,' said Glan Davies, with a portentousness which did not register at the time.

Glan Davies joined us from Delhi, where he had his headquarters as the representative in India of the United Nations' Children's Fund, and he was going through to Kabul with us to negotiate a UNICEF agreement on a new mother and child health programme. Afghanistan happened to be part of his 'parish' because of the row between that country and Pakistan over 'Pushtinistan', the frontier tribal territories which Afghan claimed Pakistan had expropriated. As a result, the Kabul Government refused to be in any regional grouping with Pakistan and, as another result, United Nations' supplies had an awkward habit of getting delayed. As one report said, 'It takes long to get supplies across the Khyber than it takes to get them manufactured and shipped from the United States.'

Apart from a pause for a meal at the green oasis of Jalalabad, with its citrus groves and ricefields, our road (a pretty rough one, now) lay across desolate, ashen-grey desert, as bleak as the surface of the moon. Now and then we would pass a camel caravan or an encampment of black tents.

Presently, there reared up ahead a high range of ragged barren hills, the barrier between us and Kabul, through which lay the Lataband Pass.

To Afghanis, reckoning by the Moslem calendar, they are still in the Fourteenth Century and, even reckoning by Anno Domini, they might still be. Certainly, on the Lataband the Fourteenth Century collides with the Twentieth Century. But dates, there, are irrelevant; when a car is jostled by a camel on a shelf 10,000 feet up, one reckons not in time but in Eternity.

The tribes had chosen this time for a seasonal migration. It might have been a scene, not from the Middle Ages but from the days of the Old Testament Patriarchs. Long, surging camel trains were filing over the pass. Mixed up with them were herds of asses, rocking along with loads twice as big as themselves, and, just as clumsy, human beasts of burden with enormous bales on their backs.

They were moving in families: men, women and children, with all their goods and chattels; their tents and blankets: their pots and pans and jars. Tethered poultry skidded and flapped on the backs of asses. Infants were bound to the humps of camels and slept to the motion of their living cradles.

But into this old-world migration barged the Twentieth Century in the form of mechanical monsters with impatient hooters. The frontier tribesmen driving their huge trucks had no compunction about scattering their traditional brothers. They stampeded the animals and, although the camels were recalcitrant but not stupid, the asses were both recalcitrant and stupid. The camels, complaining loud v, would at least avoid the crumbling edge of the precipice and back against the wall of the mountain, but the asses just dithered, their ill-trimmed loads threatening to tip them over the edge, until their owners, with much belabouring and tail-pulling, would wrestle them back to safety.

In this scrimmage we were menaced by both the ancient and the modern. Our driver was more considerate of the migrants than the truck-drivers, but the truck-drivers had no more consideration for us. It was often a toss-up. Would it be a truck or a lurching camel which would force us over the edge?

The road through the pass was unsurfaced, but still a

remarkable piece of engineering which had notched this shelf out of the mountain-side. The bends were entirely unpredictable. Landslides of limestone rock had, in places, made the road barely passable. The precipice edges were crumbling and at one point the instinctive acceleration of the driver alone saved us as the road slid from under our back-wheels.

The road climbed like a fly-walk to the razor-back ridge at the summit of the Pass. The razor-back was so narrow, with a 4,000 feet drop on either side, that driving along it was a feat of tightrope walking, without the comfort of a net.

The descent was even more nerve-wracking. We had all the sensations of the Giant Dipper at a fun-fair—only much more so—and the only consolation of darkness when it descended on us was that the dangers were unseen.

I had died a thousand deaths before we were confronted by a strange apparition in the night. Suddenly, as we crossed a rise, we saw a festoon of lights dangling in the Afghan sky.

'Kabul!' said Glan Davies. And he told us the story of this strange manifestation. The lights were picking out the outlines of the two mountains which divide the capital into two. The Mayor happened to be the President of the Electricity Company and, for no practical purpose, except to remind the pastoral peoples of the plateau, and night-travellers like us that Afghanistan—or, at least, Kabul—was definitely in the Twentieth Century, he had strung these thousands of lights over the mountains. It was merely captious to complain that the generating plant was insufficient to light both the city and the mountains.

This we were to learn by exasperating experience. Steinhause would rave when in the middle of a recording the 'juice' would suddenly fail. I gave up all hope of writing at night after I had tried repeatedly to cope with the dimming lights. In the city, the street lights would fail, the 'talkies' would mumble into meaninglessness before the screen blacked-out entirely and left the audience to wonder what happened to the Indian actress (the films are mainly Indian) of whose brazen face Allah, through his servant the Mayor, apparently disapproved. But (as the long-suffering Afghans would assure us) it would be

all right when the hydro-electric generating station on the Kabul River was functioning. That is, if the Mayor did not decide to light up the Hindu Kush.

Nevertheless, we were grateful to the Mayor that first night for coming out, as it were, to meet us on that nightmare road. I decided then that when we recrossed the Lataband Pass, I would take some of those sleeping pills with which we had been so considerately provided and which we had been too tired to use throughout the trip.

To us poor nerve-raddled travellers, shivering in the cold of 8,000 feet, the hot air that rushed to meet us on opening the door of 'L'Hotel de Kaboul' was like an embrace. It had an aroma which we thought then was friendly and quaint. Quaint! We came to loathe it. It was the smell of sweet-scented aromatic wood which they burned in the stoves, mixed with the all-pervading reek of rancid mutton-fat. The smell of boiled cabbage is 'Nuit d'Amour' in comparison. And it persisted all the time. One woke in the morning with the mutton-fat congealed in one's nose. One went into breakfast and had eggs fried in mutton-fat and there were little globules of it in the parboiled tea. For lunch one had mutton cut with the grain and for dinner mutton cut against the grain. And always mutton soup. Our stomach had become inured to almost any kind of food, but I confess that I dreaded the next meal as I would a really rough Channel Crossing, and I counted that menu one of the toughest tribulations which the WHO experts who lodged at the 'Kaboul' had to face in their rigorous existence in Afghanistan.

Afghanistan, now struggling to take its place in the modern world, has an enormous lee-way to make up. Historically, it has been the buffer state between the East and the West and between Russia, just across the Oxus River on the North, and the Indian sub-continent beyond the Khyber on the South. Aryan culture seeped westwards through Afghanistan. Through Afghanistan came Alexander the Great on the road to India. The Afghans claim to be descended from King Saul and are called by their ancient chroniclers 'Beni-Israel'. This was once part of Parthia and the people are allied in race to the

Persians. Their dominant language, Pushtu, is akin to Persian in some ways and follows the Arabic script.

In more recent history it suited both Britain and Russia to have Afghanistan as an undeveloped country and kept in a tribal condition. For the Hindu Kush forms a solid barrier across the centre of the country and cuts off north-south communications. The strategical picture would have been different if roads and railways had traversed the country from the Khyber to the Oxus. So long as the country was so uninviting neither the competing Empires of the Czars and the Emperors of India would have serious designs upon it. It suited both parties then. And, curiously enough, the U.S.S.R. has respected faithfully the treaties of the Czars, and I was assured, by those who would have reason to suspect any designs, that the Soviet has behaved scrupulously with regard to Afghanistan; there had been no penetration nor infiltration of a country so feudal that it might have seemed ripe for organised disaffection.

Here is a country the natural resources of which are virtually unknown and quite undeveloped. Here more than ninety per cent of the population is agricultural and most are pastoral nomads. The methods of agriculture are primitive and, until very recently, there was no industry worth speaking about. There are few roads and those which exist tear to pieces the vehicles which use them. And there are no railways and no regular air-services. Coal which is accessible by simple mining is scarcely worked and the mountains are continuously stripped of any vegetation usable as fuel.

Nobody knows how many people there are in Afghanistan. No proper census of the whole country has ever been taken, and a local census in Kabul was a farce because to the devout Moslems inquiries about the number of women in their household is a dangerous insult, and censuses which do not include women are obviously scarcely reliable even for guesswork purposes. To say that it is 12,000,000 is not even an approximation, but it is the best the authorities have to work on.

The Cabinet, with only two exceptions at the time we were there, consisted of members of the Royal House. The Prime Minister, His Royal Highness Sardar Shah Mahmoud Khan Gazi, was the uncle of the King, Mahammed Zahir Shah. An uneasy balance of power was maintained between the branches of

the Royal House, the tribal chieftains and the mullahs, or priests.

When King Amanullah, now in exile, ruled the country in the 1920's he tried to follow the example which his father had set when he first introduced motor-cars, telephones, the first modern college and a hydro-electric scheme. Amanullah, among other modern reforms, tried to break *purdah* which strictly segregates women from all public life, hides them behind the *shardri*, which is the Afghan version of the *burqua* or hood, or in the seclusion of the women's quarters in the households. He brought his own queen out of *purdah* as an example and took her on a tour of Western capitals, being feted and photographed without her veil. This even more than his attempts at technical advancement was the excuse for his overthrow in January 1929. The mullahs preached a holy revolt, with the support of the tribal chieftains, and Amanullah was overthrown and driven into exile. His successor, Nadir Shah, was assassinated in 1933 and was succeeded by Mohammed Zahir Shah. [In Afghanistan, a member of the Amanullah branch told me bitterly that the 'holy war' was a pretext, that in fact the mullahs counted for very little with the tribal chieftains who had expelled the king and that the whole thing was devised 'from outside' because Afghanistan had to be kept from being developed as Amanullah had intended that it should be.]

Since the Second World War, however, the Royal Afghan Government has been determined to modernise the country. Foreign experts, mainly American and German engineers, were engaged directly, but as soon as the United Nations proposed to help the under-developed countries, Afghanistan turned to it for experts.

The first United Nations Mission agreed with the Government on a series of projects by which changes within the competence of the people themselves could produce the maximum immediate results—pending more ambitious development programmes requiring large-scale foreign help, investment and equipment. The programme has been extended and expanded from that original premise until today Afghanistan has one of the biggest UN Missions in the world.

The story of Technical Assistance in Afghanistan is an inspiring one, which ratifies by its simplicity.

As in the case of the *terai* we must turn back the clock—to Genghis Khan, the Mongol conqueror of 850 years ago. Then he and his Mongol and Tartar hordes swept over the Oxus into Northern Afghanistan, where there was an industrious peasant population and a canal-civilisation. The invaders either killed or carried off the peasants and the canal systems collapsed to become the breeding places of the malaria mosquitoes. The area between the Hindu Kush and the Oxus became virtually uninhabitable.

There grew up a Pathan saying, 'If you choose to die, go to Kundus'. Kundus is in the centre of the malarial belt. Time and time again efforts were made to resettle this fertile stretch. There were compulsory migrations in which whole tribes were forcibly settled. It never worked. They either died off or fled to more hospitable regions.

In 1950, a WHO team chose to go to Kundus. It included Indian malaria experts and a Haitian public health engineer. Following the pattern of similar malaria-control projects they started the hunt for the carrier. Dr. Dhir, the malariologist, identified it as *Anopheles superpictus*. And if teachers need to be confirmed in their conviction that Afghanistan is in the Middle East, this fact would support them. For this is the mosquito of Crete, Turkey, Lebanon, Syria and Persia and was common in Cyprus until it was wiped out. 'In some places,' according to a standard work on malaria, 'it can make the land uninhabitable by man.' That is what happened in Northern Afghanistan.

Its breeding places are in clear sunlit water and it is addicted to horses and cattle, so that when it comes to the spraying operations not only the homes but the cattle-quarters have to be tackled.

The WHO team started spraying houses and villages over an area of 175 square miles, with a population of 45,000. In 1951 the programme was increased three-fold.

They beat the mosquito. They controlled the malaria. They opened up a whole rich region. The old saying was modified to the present call, 'If you choose to prosper, go to Kundus'.

Prosper they can. In addition to food-growing an area has been opened up to cotton-growing. A modern cotton-mill at Pul-i-Kumri in this region is in full swing but it cannot weave all the fibre, and Afghanistan for the first time in history has been

exporting cotton. The United Nations through FAO has provided expert advice on how to improve and develop this new cotton production. And, incidentally, the United Nations experts have found oil, up near the Oxus, which they are helping to exploit in the malaria-free belt.

I was in Afghanistan when Dr. Dhir was winding up this great work and if anyone wanted to know whether such efforts are appreciated they should have witnessed the gratitude which he received.

Just by the way, and as a job incidental to clearing up malaria, the team also used DDT to rid Kabul and Kandahar of the recurring plagues of typhus. It so happened that malaria and typhus were not concurrent so that the WHO experts could turn their efforts in the malaria off-season to the problem of the lice which cause typhus.

We saw something of how typhus was tackled and I almost came to the conclusion that the only people in Afghanistan who have lice are the well-to-do. Ministers were quite prepared that we should go into their villas and see their children and their belongings being dusted with DDT powder. Civil servants and doctors were most obliging, too, but there was an obvious reluctance to take us into the poorer quarters. We thought we had succeeded when an Afghan doctor led us down a narrow gully between great baked-mud walls to what looked like a broken down postern, and then into a gloomy maze. I thought, 'Here is the slum in which whole families are immured during the winter when the weather is so severe that the schools have to be closed and work abandoned.' I was expecting a kind of mud igloo, but presently we emerged into a courtyard like a Persian artist's version of the Moslem Heaven. There was a fountain in the centre and an ornate patio around it, with the family quarters of the many wives of an obviously rich man. And so he was, but he graciously agreed to be deloused and to bring out all his children and all his belongings—except his wives and grown-up daughters—for dusting.

It was only with difficulty that we discovered that the reason why we could not see the slums was that it would have needed a small army to get us, as strangers, into the homes of the poor. So we had to 'settle' for an expedition to the outskirts

of the city where the tribesmen were stopped from entering the town until they had agreed, with the best of grace, to have their clothes and their beards dusted with delousing powder.

Anyway the tactics have worked and the two cities have been kept free from typhus.

Another big WHO campaign is against venereal disease, and now for the first time Afghanistan has serological and bacteriological laboratories and clinics and supplies of penicillin with which to attack syphilis.

It was obvious from the first surveys of the country that the agriculture of Afghanistan could be revolutionised by modern methods. In a country which has a low rainfall—an average precipitation of about twenty inches per annum, seventy-five per cent of it between January and April—that can only be fully achieved by big irrigation schemes and the discovery and development of underground water supplies. All that is intended. But in the meantime a minor revolution has been produced by simpler methods, not by advanced farm-technology and the introduction of elaborate mechanised methods in a country which has to bring all its petrol (until it can produce its own) by motor-haulage over the Khyber.

One of the first things which FAO did under its expanded technical assistance programme was to introduce a team to demonstrate the use of hand-tools. The only tool which the Afghans had for haymaking was a primitive sickle with its blade set at right angles to the handle, which was used by the peasant squatting on the ground and grasping the grass, or corn, in his left hand. A Swiss FAO farm implement expert, accustomed to mountain conditions, and a team of scythers from the Austrian Tyrol were sent in. The Austrian Government supplied the jeep and the tools as a contribution to FAO's work.

The team was able to show the Afghan peasants that a man could mow many times faster by the scythe than with the local sickle. They trained people on the mountains; they distributed 500 scythes to Afghan demonstrators; they showed Afghan blacksmiths how to make scythes and they schooled students who went all over the country showing what could be done. An

FAO fellowship was awarded to an Afghan student to go for a year's training in Switzerland in the use of hand-tools.

Similarly revolution was produced by the introduction of the ordinary hoe!

By extending this programme the productivity per man on the mountain pastures was increased five-fold in a single year. And the programme had the obvious advantage that it appealed to the farmers as something which he could easily do, without ambitious changes before he could afford them, or was trained for them—internal combustion machines for instance.

How simple changes can have immeasurable value in a country so backward as Afghanistan was also illustrated by the case of the karakul sheep. Karakul, the fur of the lamb, is in Afghanistan the only real source of foreign exchange and gives employment to over 1,000,000 people. Before 1934 the industry was in a flourishing condition, but in that year adverse circumstances meant that only 1,100,000 pelts were exported. By 1945, this had risen to 3,000,000 but in the following year it had dropped again to 1,700,000. This fall was due partly to bad weather, partly to sheep-disease and partly to the chronic lack of winter fodder which could account for a loss of about forty-five per cent of the flocks in a single winter.

Karakul experts were sent in. So were veterinarians to tackle the disease. The more efficient haymaking with scythes played an important part, but there was also a new factor.

And here we are, back again in malaria control because the new factor was the cotton industry, which was possible only through the clearing of malaria from the growing-region, which could now supply oil-cake as the winter feed of the dollar-earning karakuls.

Another example of immediate results was the FAO campaign against rinderpest, the cattle-disease. A veterinarian from FAO arrived in response to an urgent SOS in 1950 to deal with a serious outbreak of cattle plague which was raging in the province of Herat. By March, 1950—in less than six months—over 30,000 cattle in the valley of Herat had been inoculated and the outbreak was arrested. This campaign was then extended all over the country. During 1951, over a million cattle were protected and the protection was pushed wider and wider. This was possible only because of the intelligent

co-operation of the cattlemen, who were quickly convinced by demonstration and agreed to bring their cattle for inoculation and to have whole areas scheduled against cattle movement. In a reputably unlawful country, where cattle-running could have been quite simple, the tribesmen by self-imposed discipline established these *cordon sanitaires*. Rinderpest can be completely eradicated from Afghanistan. For rinderpest and for vaccination against *Rhanikhet* or 'Newcastle Disease' among poultry, the FAO provided freeze-drying machines for the preparation of the vaccines on the spot.

Although agriculture is the biggest industrial problem and health the most urgent social problem, Afghanistan has called for UN help in almost every aspect of the country's needs.

I sat with Mr. Phil Beck, then Resident Technical Assistance Representative, in several discussions with Afghan officials who were planning the country's economic and social development. The range of their requests varied from reorganisation of the whole public administration (including, presumably, themselves) to getting a press-photographer in a country without one. The 'indents' included experts in oil-drilling, economic planning, telephones and telegraphs, statistics, underground water, labour relations, cotton culture, weather forecasting, cottage industries and civil aviation. They wanted experts to help them to carry out the programme of educational reform presented to them by Dr. Sidet, the French educationist, sent out by Unesco to investigate. They wanted professors for their college and airmen to bring the outside world to them, in a country where the non-existence of a meteorological service made flying eminently dangerous.

I met the gallant band of UN experts who were already there. I did not envy them their existence, cloistered behind the mountain barriers, practically out of touch even by telegraph with the world they had left, but I envied them their devotion to their duty and to the people they had come to serve. They included women doctors from Finland and Denmark, a West Indian, a Belgian, a doctor who had come from Burma and a professor from Copenhagen. Indians, British, Americans, French, Austrian, Swiss. As one said to me, 'If we kept

each others' national holidays, we wouldn't do any work.'

The work is always extending. Even outside the orbit of UN activities, there is American Point Four and Afghan-promoted enterprises like the hydro-electric scheme on the Kabul River and the other big scheme on the Helmand, which runs into Seistan, in Persia. This region around Kandahar is another Kundus story, for this region was delivered over to disease by the depredations of Timburlain and his hordes two centuries after Genghis Khan. This again is another area which is to be opened up by irrigation, with industrial developments powered by hydro-electricity.

On the social side there is the really great work possible among women and children under the UNICEF agreements which Glan Davies had brought for signature: hospitals, clinics, training of midwives and health visitors and, by the only possible way, a breaking through by international women doctors of the barriers of *purdah*, more strict here than anywhere else in the world.

The women want to escape. While we were there, the women of the Royal family petitioned the King to be allowed to discard the *shardri*. This they regard as a complete humiliation—a view shared by the poor shrouded mother whom we asked to come into a photograph of children receiving Children's Fund milk. She declined not because she objected to being photographed but because she objected to being photographed in the degrading *shardri*—even though no one would identify her. The approach was certainly premature, although in the Royal Household itself and among the well-to-do, the *shardri* is a farce. These women have beautifully shingled and coiffured hair, cosmetic complexions and Christian Dior creations under the cloaks they wear.

But they have one route to emancipation. They are joining the midwifery and nursing classes and taking medical courses. I wonder what might have been the effect on history if we had succeeded, as we almost did, in getting photographs of the beautiful, unveiled daughters of the Prime Minister—princesses of the Royal House—attending their first class in the nurses' training school. Almost but not quite because His Royal Highness withdrew his permission at the last moment.

There is the beginning—breaking through with the most fundamental education of all, teaching women how to respect their bodies and themselves.

With the help of my sleeping-pill, I went mercifully to sleep on that hazardous return journey across the Lataband, but I brought away a lively impression of a Rip Van Winkle country stirring, rousing itself and waking up, as I did eventually, in the modern world.



PART TWO

THE THREE P's

*Being Some Important
Lessons to be Learned*

The Problem

WHEN we set off on our mission we were told to sample, consider, describe and illustrate the 'Three P's'—The Problem, The Programme and The Progress—and we had been given the chance of doing so in the jungles of Borneo, the volcanic hills of Java, the temples and teak forests of Thailand, the tuberculous slums of Rangoon, the foetid, hungry villages of the Ganges Delta, the plague-spots of Calcutta, the ricefields of Orissa, the tiger-country of the Himalayan *terai*, the burning-ghat of Lahore, the desert of the Sind and the mountain fastnesses of Afghanistan. We had seen a cross-section of South-East Asia.

The Problem can be expressed in one word: Poverty.

Two-thirds of all the men and women and children who share the resources of this minor planet with us have to endure squalor, disease, hunger and starvation, ignorance and premature death. This litany of Poverty is not new; it has existed all man's days. What is new is that the industrial revolution and the advance of science and technology have widened the gap and exaggerated the differences between the prosperous and impoverished societies. What is new, too, is the way in which transport and communication have so diminished distance that the peoples of Asia, Africa, the Caribbean and Latin-America are just over the fence from the better-equipped countries, which cannot avoid these neighbours. Just like disease, poverty is infectious and contagious.

What is also new is that there is a recognition of these facts and a new outlook upon world social problems. This is true to an extent which would have been inconceivable fifty years ago, and it remains true in spite of all the distractions of power politics and of conflicting ideologies. And it will remain true even when statesmen and politicians lose their way or when

the beating of fists on the conference tables drown the sound of the hammers that are building the Ark of a New Covenant.

With better or worse grace, governments have recognised the principle that in the interests not only of their own communities but of the world in which these communities exist they must organise and undertake mutual aid. This was implicit in the Four Freedoms, the Atlantic Charter and the deliberations of the Hot Springs Conference, in the darkest years of the war, which led to the creation of the Food and Agriculture Organisation. It was implicit in the resounding preambles of the constitutions of the United Nations and all its specialised agencies and it was spelled out by President Truman in his 'Point Four'. Indeed his fourth point was added to his Inaugural Address to give his endorsement to a proposal already made by the Economic and Social Council. He said: 'We must embark on a bold new programme for making the benefits of our scientific advances and industrial progress available for the improvement and growth of under-developed areas'.

Meaner spirits may grudge the contributions which in practice this principle must mean: they may take the role of the paymaster and try to make the receivers conform to their ideas. They may attach political, economic and even military strings to what Truman obviously meant to be a great, disinterested act, but 'Mutual Aid' is now part of the fabric of a new social philosophy.

The Problem is Poverty. And Poverty is a Misery-go-Round, a vicious circle: Disease—Under-Production—Squalor—Ignorance—Malnutrition—More Disease. People who are sick cannot produce food, nor earn enough to buy it. If they are ignorant as well as sick and hungry, they cannot better themselves. So they are malnourished and malnutrition breeds disease.

We saw the significance of all this at close-quarters, in that great under-developed region of tropical Asia, where more than a quarter of the world's population lives and multiplies. The conditions are not peculiar to South-East Asia but they are magnified and intensified.

But within The Problem there are secondary problems.

These countries are old countries, although we reckon India, Pakistan, Ceylon, Burma and Indonesia to be 'new' countries, because they have achieved their modern independence since the Second World War. In this region there were civilisations and cultures when the forefathers of the Industrial Revolution were running around in woad. Here was Wisdom thousands of years before what we now call 'Science'. Here were established religions long before the religions of the West emerged. Each people had evolved its own way of life, which, no matter how it may have become overlaid by the abuse of religious practices and superstitions, or caricatured by socio-religious systems, like the Hindu castes, or degraded by poverty, is still a valid cultural pattern.

What the West has to offer is the product of barely 200 years of technology. Yet that technology, as a component of modern science, has produced greater material changes in the space of a lifetime than had been accomplished in the whole previous span of *Homo sapiens*.

One of the problems within The Problem is what may be the effects of unleashing this great potential of technology—for they may not all be good. As the Asians are not slow to remind one, the West has already unleashed the atomic bomb on an Asian people.

Ours, however, was not an anthropological or sociological investigation and at best we could hope only to glimpse the hydra-heads of The Problem.

That was why we started off in Borneo among the jungle Dyaks, to see what the resistances to technical change might be among an intelligent but simple pagan people. All we got was a glimmer as feeble as the wick-lamp by which Sigota was learning her A.B.C. at the jungle night-school, but the advice of people like Tom Harrisson was that they would respond rapidly, perhaps too rapidly, to innovation.

Tom Harrisson was one of the founders of Mass Observation in Britain. He had been on expeditions to New Guinea and Borneo and decided to apply his anthropological methods to places like Bolton. He acquired a reputation as a writer and a broadcaster and then during the war he disappeared, like so many others, from public ken. When he was later awarded the

D.S.O. it was for his action in dropping out of the sky into the interior of Borneo to organise resistance against the Japanese garrison of this island, the third largest in the world. After a brief reappearance, he decided 'to go back where he belonged', among the tribesmen of Borneo. Officially he became the Curator of Sarawak Museum, but in practice this was only a device by which he could spend most of his time going off alone among the Kelabits, the Kayans, the Melanaus, the Ibans and the Land Dyaks, not to mention the Pusans, the Bornean nomads. When I caught up with him he had grown a beard, was wearing his hair so long that it might have been mistaken for a warrior's horse-tail, was tatooed as a tribal blood-brother and was dressed in a sarong-skirt. There was no doubt about his influence—'Tuan Harrisson' was sufficient pass-word anywhere—or that his knowledge and advice had shaped the official, common-sense attitude towards the tribes. He did not want them to be treated as museum specimens, as the Rajah Brookes had hoped to do, but to prepare them sensibly for the intrusion of the technological world, already penetrating into the jungles and the uplands in the form of commercial gadgets.

He told an amusing but significant story of how he had set off from a longhouse in the interior on a four-weeks' canoe-journey to the coast. The canoe was one of those remarkable craft shaped out of hollowed tree-trunks and the boatmen manoeuvred the rapids and the crocodile pools with long poles. They had barely left the starting-point when a spider-catcher bird flew in the wrong direction across the river. This was a bad omen and the boatmen immediately brought their boat ashore, set up a shrine and appeased the gods for twenty-four hours before they got an omen from the 'good' side of the river. They went on but had gone only about twenty miles when another omen appeared on the wrong side. Tom, with all his patience with pagan ritual, was getting rather bored. So he made a suggestion: Why shouldn't they stand back to back? Then the omens would be bound to be on the 'good' side of one of them! The boatmen thought this was uproariously funny: Tuan had outsmarted the gods! And cocking a snook at the gods in this fashion, they took him through without further hindrance to the coast.

The point of this story is that if White Man's Magic could be shown to be cleverer than Jabu and his like, then modern ideas would prevail. These are Gods of Fear—fear of the sicknesses they send and the blighting of crops which brings hunger. If they can be shown how to combat disease and improve their crops, they will be less afraid of their gods.

They have no misgivings about things like radio or internal combustion engines, about which obviously their gods know nothing. I can quite well imagine the old Palan Gawai of the Riam longhouse using a microphone and a loud-hailer to argue with Jabu and substituting morse-code for the human head in his diplomatic exchanges with the Spirit of the Mountain.

Like Tom Harrisson, I had considerably more misgivings about the ill-effects of innovations than about resistances to change. According to the public-health textbooks, a longhouse must be a dangerously unsanitary place. Some people might also see a dangerous immorality in all those families living under one roof. But your view of a longhouse depends upon the angle from which you look at it. If it is horizontal, that is pagan and uncivilised; if it is vertical that is a tenement and is civilised. Having known a great many tenements in my time, I can testify that the longhouse of Riam was a great deal more sanitary, moral and civilised than its vertical counterpart in the Glasgow Gorbals. Of course, these *kampongs* can be improved but not, I trust, at the expense of the genuinely valuable social-structure which a longhouse represents. Chromium-plated plumbing is a poor substitute for human brotherhood.

My own conclusion, for what it is worth, is that technological advance will meet fewer impediments in a simple society, like the Dyaks, than it will in more complex societies where religions are more sophisticated and ignorance is bound up with superstition and also with time-honoured exploitation.

For example, in the Himalayan *tsu*, the authorities were concerned about the continuing activities of the Pahari, the industrious hillmen who are also the money-lenders. They come down among the Tharus and Bhukas, during the cold weather and work as labourers. They go back to the hills, after lending their wages to their employers at usurious rates which

works out at twenty-five per cent a year, or two annas per rupee per month, or, in kind, five kilos of produce per rupee. They do not need the help of civil law to recover their interest (it is interest they want not repayment of the debt) because the credulous Hindus believe that when a son dies it is because he was a creditor in a former life. For this reason, families pay debts owing for generations in case the creditor should become the debtor's son. . . .

There are the obvious religious hazards in the way of efficiency and change—the Hindu and the Sacred Cow or his difficulties about changing caste in changing his occupation; the Buddhist who regards the killing of a mosquito as a sin; the Moslem who will not let his wife (or wives) be seen; the taboos (often without religious sanction) which prevent nursing and expectant mothers from eating exactly the foods they and their infants need, and so on. But these are not something to over-ride but to meet with tact and persuasion—as Dr. Sambasivan did when he succeeded in winning a traditional religion, Buddhism, as his ally, even though it meant the killing of the mosquito.

Although it sounds a heresy coming from a science editor, I maintain that science must be prepared to compromise with superstition in the interests of better well-being. And I hope it does not sound too cynical if I point out that if religion prevents the people themselves from doing something which seems sinful (i.e. killing a malaria mosquito) they may be prepared to connive at an international team taking the sin upon their infidel heads, which is quite a sound argument for outside help.

My overwhelming impression from the journey was that the most important factor in Technical Assistance was the emancipation of women. That, I shall be reminded, is well outside the brief of the Technical Assistance Board which is not concerned with Human Rights but with measures to advance the economic development of these countries. That is exactly what I mean: there can never be real economic development until women are emancipated. This is not merely a question of bringing them into work (after all, even in Moslem countries peasant women work very hard in the fields) but of making them partners in technical changes. I found in South-East Asia,

in those countries where women are still the suppressed sex, that the greatest resistance to change was the unprivileged woman. And I had found the same in my desert journey. The woman who had been denied benefits resented benefits to others. The woman, who, like her mother and her grandmother before her, had belonged to an unchanging pattern of existence resisted the change of that pattern, even if it only meant a new way of ploughing. The wife who submissively kisses her Lord-and-Master's feet is the hidden matriarch who exercises a profound influence on the family, including the sons. One sees it as its most obvious in the attitude of the mother or mother-in-law in the case of the young wife who is expecting a baby. Repeatedly one heard the same story from the nurses, 'We got her to the ante-natal clinics. We persuaded her to go into hospital because it was going to be a difficult delivery, but the mother-in-law and the husband came and dragged her home again and called in the *dai* (or the *bedan*).' But one also heard versions of it from those who were trying to introduce new methods of agriculture, to set up co-operatives, or to create village banks. 'The men can be persuaded; it's the women!'

The problem of the women is less intractable than it sounds. There was Tabinda and the 'new' women of India, and there was Miss Parwati in Java—a girl with pigtails and an ingenuous expression who came to see me in Solo, in Central Java. I thought she was a schoolgirl wanting an autograph, but she wanted an interview instead. She turned out to be eighteen and one of the regular broadcasters. This she had achieved in face of violent opposition from her orthodox Moslem family. 'But,' she said, demurely, 'my father ... now bought a wireless set and my mother listens. So will you give me an interview, please, about what women must do. And do you know Mrs Roosevelt? And do you let your wife take part in public life? And ... ? Subversion by radio!'

Miss Parawati has her anonymous counterpart in *purdah*-ridden Afghanistan, where an enterprising radio-director started a Woman's Hour, which might be called 'Purdah Programme'. He brought an educated girl to the microphone as commentator. He was compelled to have a special studio for her and a separate entrance by which she entered hooded, but even then the outraged mullahs made sudden raids on the

studios to see that *purdah* was maintained and that her face was never visible to the male staff. Nevertheless, she was 'The Trojan Mare'. Here was an educated woman talking to women who had been denied education, and the director, when we were there, was screwing up his courage to put her on assignments which belonged to the men's world.

In Burma, there is no such problem. The women have complete equality and a full part in professional and public life.

Illiteracy and ignorance, apart from superstition and religious conventions, are an enormous resistance to change because the means of communicating ideas are so limited, and because whatever is attempted in the way of technical advance must rely on a substantial number of people with at least an elementary education. Intelligence and common sense and enthusiasm can achieve a great deal but there must always be a sufficient cadre of personnel with some degree of schooling. If, for instance, you want sanitarians or medical auxiliaries, they must have at least a Fourth Standard level of education on which the additional training can be superimposed. If you want doctors, you must have secondary schools as well as medical schools. Similarly in any of the other essential services. It means elementary and secondary schools, technical colleges and universities. But first of all it means teachers. . . .

If we take it that four out of five people in this region are illiterate we can imagine the magnitude of this task of preparation. There is a great leavening urge for education yeastng and fermenting in every community—like Sigota going to school in the jungle darkness, the Javanese farmers building their own adult education centres, the Punjabis in the *haj* forming co-operatives to hire tutors for their children, or, as we saw in Kabul, tall, bearded Afghans, husbands of multiple wives and fathers of multiple families, learning their Pushtu A.B.C. in the 'analphabetique' classes. And everywhere we saw the need for what Unesco calls 'fundamental education' which will be discussed in the next chapter.

Another problem within The Problem is 'Too many people on the land'. This is the strongly stressed theme of FAO and it is one of the things which ILO is helping to correct with rural industries and the revival of old crafts. It seems a paradox to say

that if you take people off the land the soil will feed more—including the people you take off, but it does not need much examination to show that this is so. If a piece of land which supports one family in this generation has to be sub-divided amongst the sons and their families and maintain them in under-employment, the level of subsistence will be absurdly low. One of the curses of the peasant economy is this under-employment, and yet at the sowing and the harvesting a lot of hands are needed. So the answer cannot be merely to drain the excess people into the big cities and mass-production industries; it must lie in the encouragement of village crafts and industries appropriate to a locality, or to agriculture itself. As Sir John Russell has pointed out, one land-worker using traditional methods can feed four or five people, but with modern methods (impossible when the land-units are too small) one person can feed fifteen to twenty.

On our journey an uninvited member of our mission was the Reverend Thomas Robert Malthus. Wherever we went, Malthus, dead these 118 years, went with us. Whenever we saw anything particularly impressive, like health projects clearing whole regions of malaria or yaws, or checking pestilential diseases, Malthus would be there to remind us that every life which modern medicine saves is a human being left hostage to famine. That is the quandary which confronts not only S.E. Asia but the whole human race—whether production will keep pace with reproduction. It is the familiar Malthusian doctrine—that mankind will multiply beyond the capacity of the soil to sustain it. The multiplication factor has obviously been increased by the medical resources which we now have at our disposal. Every infant saved is another mouth to feed; every boy and girl who survives to marriageable age increases the number at compound interest. It does not need a senior wrangler to calculate what it would mean if we succeeded in raising the Eastern expectation of life to the British rate of nearly seventy: by A.D. 2000 there would be as many people in the already famine-threatened Indian sub-continent as there were in the whole world at the beginning of the century; that is, if the reproduction rate is not controlled. Pestilence, wars, and famines have hitherto been the natural checks on population growth. If we

can eradicate pestilence and avoid wars, we are still left with the Pale Horseman of the Apocalypse—Famine.

As we have seen, the direct attack, using only a few of the armaments of modern medicine—like DDT, penicillin or the sulpha-drugs—millions of lives can be preserved. Add to that the indirect methods of public health and improved sanitation or Mother and Child Health and UNICEF milk and multi-millions more can be affected. Every time Big Ben ticks, there is an extra mouth to be fed in the world. Or, put it another way, every day a Cup Final crowd arrives without ration books.

Are the doctors and medical scientists and all those earnest men and women whom we met in the field only saving lives to sacrifice them to die of starvation? If they succeed, will not famine supervene not only for the people of the under-developed countries but for the whole of humanity?

That would seem the obvious deduction from ‘simple arithmetic’, as Professor A. V. Hill called it in his presidential address to the British Association in 1952.

‘There is much discussion of human rights,’ he said. ‘At what level can these reasonably be pitched and do they extend to unlimited reproduction.’ And in another passage he asked, ‘Had it been possible to foresee the enormous success of this application of medicine and hygiene, would humane people have agreed that it could better have been held back, to keep in step with other parallel progress? Some might say, yes, taking the purely biological view that if men will breed like rabbits they must be allowed to die like rabbits, until gradually improving education and the demand for a higher standard of life teach them better. But suppose it were certain now that the pressure of increasing population, uncontrolled by disease, would lead not only to the exhaustion of the soil and of other capital resources but also to the continuing and increasing international tension and disorder making it hard for civilisation itself to survive: would the majority of humane people then change their minds? If ethical principles deny our right to do evil in order that good may come, are we justified in doing good when the foreseeable consequence is evil?’

The ruthless logic of this is that we should withhold all the things which this book has been describing and deny the people of the impoverished countries the advances of modern science.

But is this not the doctrine of the inevitability of poverty which the earlier Malthusian arguments were used to justify—the doctrine, which as J. L. and Barbara Hammond said in *The Town Labourer*, ‘Put a cushion under the conscience of the well-to-do?’ It was used as the argument against all social improvement because obviously it was not a kindness, but positively inhuman, to better the lot of the human-animals because it would only make their condition worse. But instead of improvements leading to a disastrous increase in population, they produced a situation in which Britain has to offer Family Allowances to maintain the birth-rate.

Anyway, it is not a matter of simple arithmetic: the food and population equation involves so many variables which can be affected by the actions of men. Man is not just a belly to be fed; he has a pair of hands and, above all, a brain by which he can become the master of his own environment. The equation can be affected either by the control of reproduction or the increase of production; or, better still, by both.

Those who argue that health measures should be withheld until the peoples of the under-developed countries ‘stop breeding like rabbits’ are being both inhuman and illogical. If people are condemned to live like animals, they will go on breeding like animals. Excessive reproduction is itself a factor of poverty—both of ignorance and of malnutrition. It is not only that ‘they do not know any better’ but that, by some strange biological urge to survival, people who are undernourished are peculiarly fecund. Dr. Josue de Castro in ‘Geography of Hunger’, in which, as Chairman of the Food and Agriculture Organisation, he replied to the Neo-Malthusians, sought to establish a definite correlation between high-protein intake and low birth-rates. He gave statistical evidence—e.g. Formosa with a birth-rate of 45.6 has a daily consumption of animal proteins of 4.7 grammes while, at the other end of the scale, Sweden has a birth-rate of 15.0 on a daily consumption of 62.6. Unfortunately, he omitted from the list the case of Iceland with a birth-rate of 25.6, scarcely less than Japan, and a daily consumption of 74 grammes of animal protein *per diem*, which is the highest average in the world. One might suggest that high-protein intake is merely an index of a high standard of living involving many other factors which reduce the birth-rate. *Per contra*,

people who are ill-fed are also impoverished and if the standard of life is raised out of the abyss of poverty, birth-rates decline. For example, Sir Bengal Rao has instanced the fact that in Bengal the peasant who farms ten acres has a family unit of 'respectable' proportions, while one with less than two acres has an enormous family.

So what we have to consider is not the inevitability but the indivisibility of poverty—the compound factors of disease, hunger, ignorance and squalor. That raises what one may call 'The Gorgas Theme'. De Lesseps disastrously failed to build the Panama Canal (at a cost twice as great as the groundnut scheme, £64,000,000 in the money values of 1889) because of disease. *The Panama Canal could not be built until Surgeon-General Gorgas, and Ronald Ross, cleared the isthmus of yellow fever.*

Similarly, the resources of the tropical countries cannot be developed until the mass-diseases are removed. Diseases like malaria, tuberculosis, yaws, bilharziasis, hook-worm and dysenteries overlay the material resources of these countries as certainly as the jungle but, more than that, they smother the innate resources of the people themselves. Therefore, in the van of Technical Assistance must be the medical services.

We have seen what can be done to control disease. The retort of the Jeremiahs will be 'Yes, but in controlling disease the immediate effect must be an increase in population'. True, the *immediate* effect is so and if the doctors and sanitarians get too far ahead of the agronomists, the teachers and the technicians of industry, the consequences, even in the short-term, may be serious. That is why a Technical Assistance programme and the plans for large-scale development must always be a concerted attack. But, without over-emphasising its significance, one can point out that the control of disease can have direct effect in the feeding of the people—not only by opening up new tracts, as in the case of the *terai*, but by increasing the food production of Mymensingh, East Bengal, by fifteen per cent merely by making more hands available at the critical seasons of the transplanting and the harvesting.

The Problem, then, is Poverty and the programmes of Technical Assistance, whether they are provided by the World

Health Organisation, the Food and Agriculture Organisation, Unesco, the International Labour Office or Technical Assistance Administration, must be judged by their impact on the causes of Poverty.

The Programme

COURTESY with the Thais is almost a vice. They never disagree with what you say, always say what they think you want them to say and are never rude about a guest's shortcomings. The result is that it is very difficult to know what they really feel.

That was why the outburst about X was so unexpected. We were in the jungle; it was muddy underfoot, as stifling as the steam room of a Turkish bath and the leeches were troublesome. Maybe that explained it. Anyway when X's name cropped up the Thai, a science graduate, almost snarled (a Thai always purrs and never snarls): 'Why didn't they send us his book? It would have cost us less; it would have taught us more and it would have given less offence.'

X was a Western expert, probably the best in his subject in the world but still not as good as he thought himself to be. Nor were the Thais whom he was supposed to be advising as stupid or as ignorant as he insisted they were; indeed, they could have taught him many things he had not bothered to find out. He regarded himself as a sort of Minister Plenipotentiary; he condescended; he dogmatised; he never went out and roughed it with them because, of course, he knew all the answers; he directed operations from his desk; he was a consultant and they must come and consult him.

In short, he was everything a technical expert ought not to be. He was a 'know-all' instead of just a 'know-how'. He wanted to change things just for the sake of changing them. He was so conscious of his own pre-eminence that he regarded those whom he was there to advise as his inferiors and subordinates to be 'bossed'. He was not prepared to shed his *expertise* as he should have shed his coat and, in proper humility, *learn* before he pretended to *teach*. Instead of studying the conditions at first

hand and adapting his experience to the facts, he insisted that the facts must conform to his experience, derived from different conditions. He was a pundit. He was a snob. He was a failure. He was worse than a failure; he was a liability.

In technical assistance, *how* you do a thing may be more important than *what* you do. If the attitude is unsympathetic, no matter how sound the advice, it will not be taken. If susceptibilities are outraged, not only does the project suffer but a dislike of all foreign help may be engendered. The person who gets the best results is not necessarily the greatest expert, but one whose knowledge of people is combined with adaptable knowledge of the techniques he is supposed to be transmitting and transmuting. Yes, transmuting. The country which asks for technical assistance is not asking for a pre-fabricated civilisation, crated-up and loudly labelled with the country of origin; it is asking for help to improve its own way of life.

One of the fiercest arguments I had was with a Western expert who said that the people were 'ungrateful'. If gratitude is demanded or even expected, people will seem ungrateful but there can be no question of 'charity' or 'gratitude' in UN Technical Assistance. A member-state is entitled to ask the United Nations for experts and to get, and to regard, them as its own servants. Nor is it 'something for nothing'. It costs the countries of S.E. Asia one and a half times what it costs the UN because they have to find, and finance, the 'matching' personnel, all the auxiliaries, and facilities and equipment for the international experts. And that is the least of it, because a project is merely a limited demonstration which commits them to much bigger programmes and services. The UN finds, pays and ships the experts, and recently has been able to provide a limited amount of equipment. It also finances scholarships for nationals to go abroad to study.

Another expert came to me for sympathy which, in a way, he deserved but did not get. He was a fine man and a great expert. He was a man of scrupulous rectitude and he had abruptly left his assignment because he was morally outraged by the petty corruption of the nationals with whom he was dealing. He happened to be an expert on syphilis and I told him (although it was none of my business) that his job was to cure physical and not financial corruption, chancres and not

chanceries. Indeed, that particular country had asked for UN help in reorganising its administration and checking the opportunities for official racketeering which was just as widespread as venereal disease. Perhaps the professor was right and it was a hopeless task, but it was not his particular job to rectify it any more than it was his job to convert his patients to Christianity.

The late Tom Hibben, as Resident Technical Assistance Representative in Karachi, gave a party at which a new shipment of experts were to meet their Pakistani opposite-numbers. Everything was nice and friendly until a late-comer arrived with his wife who staged a scene, threw a fit of hysterics and in front of the Pakistanis abused Tom for 'putting her in a hotel full of nasty coloured people'. Tom asked me afterwards what he should do. 'Send them both home!' was my advice, because obviously no matter how good and well-meaning the husband might be, she had made his job impossible. It is tough on UN or its agencies if, in addition to finding and 'vetting' experts for suitability, they have to 'vet' the wives as well. But it is important.

The injunction, 'Know what you are changing before you try to change it!' is another imperative. My friend, Noel Stevenson, who was formerly Director of the Frontier States in Burma, gave me a perfect example. He reminded me that Technical Assistance is not entirely new. Before the war a well-meaning and energetic Commissioner of one of the Hill States of Burma decided that he would do something useful in the way of technical improvements. The tribes of animistic pagans were pig-eaters but their pigs were pretty inferior. So, at enormous trouble and expense the Commissioner imported Berkshire boars to improve the pig-stock. When they were unshipped they had to be carried on porters' backs over the hills, hauled in canoes over the rapids and brought into the interior. The tribes made days' journeys just to see and admire the magnificent elephants of pigs. They were impressed, but not one single village would take a litter from these pigs. And the Commissioner had to eat his own pigs. Later Noel Stevenson was curious enough to find out why. The reason was quite simple: there was no ostentatious ceremony in the natives'

killing or eating but there was a kind of grace-before-meat ritual by which the pigs were offered first to the gods. And the gods just did not like pigs with white spots! All that was required to revolutionise the pig-breeding in this area was to recognise that deistic idiosyncrasy and to bring in Large English Blacks.

The 'Sign of the Spotted Pig' should be over the door of every Technical Assistance office (except, of course, in Moslem countries) as a reminder of these axioms, 'Know what you are changing before you try to change it' and 'What you do may be less important than how you do it'.

The catalogue of UN technical aid to the countries of S.E. Asia is varied and covers almost every field of human development. And those activities are only part of the projects which are operating in seventy-four countries on a pittance world-budget of £7,000,000 a year. The Children's Fund (UNICEF) is not a specialised agency nor part of UN Technical Assistance. It is a supply agency, the funds of which are raised by UN from Government grants and voluntary sources, but it nobly abets Technical Assistance by the support it gives, in materials and equipment, to WHO and Unesco projects which affect the well-being of children. The Fund has allocated £6,300,000 to work in Asia, which has already had immeasurable benefits for the new generation.

Not nearly enough is known about the work of these UN agencies. Which is a pity because, while we hear all about the rows and the political troubles fomented in the Security Council and the General Assembly, people ought to realise that UN has gone into action—and not just in the military sense of the war in Korea. Those alphabetasyllabic words WHO, FAO, UNESCO, ILO, ICAO, IB and IMF and IMO are the pennants of enduring hope. Just as ILO (International Labour Office) survived the political fate of the League of Nations, in its UN reincarnation it and its fellow organisations were designed to be viable, with their own budgets and assemblies, directors-general and secretariats, and not thralled to the political vicissitudes of the parent body, to which they are answerable by reference and co-ordination through the Economic and Social Council. They are concerned with helping

to produce permanent, long-term changes beyond today's headlines or tomorrow's squabbles.

Some people, and I am one, think it a great tragedy that they were conceived and endowed only as fact-finding and advisory bodies without means of execution. As John Boyd Orr said when he became first Director-General of the Food and Agriculture Organisation, 'The people are crying out for bread and we are to give them pamphlets'. With his proposed World Food Board, he wanted to redress that by taking food out of politics and human lives off the ticker-tapes. He suggested a scheme whereby farmers could be guaranteed the prices that would ensure that they produced all the food the people needed and whereby prices to the consumers, and booms and slumps, could be regulated. He proposed 'Joseph's Granaries', whereby the supplies of the fat years could be conserved against the lean years. He was 'two jumps ahead of history' because nations were not yet ready to cede that fraction of sovereignty which such a supra-national plan involved.

With their restricted terms of reference and restricted budgets, the specialised agencies might have remained commendable institutes of applied knowledge. The premature death of UNRRA, that temporary relief and rehabilitation agency, much maligned and now much lauded (and rightly so) changed the situation for FAO and WHO. They became its legatees for its unfinished business in rehabilitation and for its unexpended balances. These residual funds enabled these agencies actively to participate in restoring war-ravages and, among other things, financing scholarships for training experts from the necessitous countries.

The International Refugee Organisation and the Children's Fund had, perforce, to be created to carry on other essential work of UNRRA.

Then came what is loosely called 'Point Four', although President Truman's call for help for the under-developed countries was itself expressing a proposal of the UN Economic and Social Council. And in the meantime, 'Point Four' itself has been considerably modified in its significance. The President was given funds, part of which went into the first-financing of the UN Expanded Technical Assistance programme, and part of which is disposed by the State Department by negotiation

with Governments. Much bigger allocations of U.S. dollars, however, went into what is now 'Mutual Security Administration', which is Marshall Aid writ large on a world scale. Under that, which combines military, economic and social aid, America by bi-lateral agreements has provided over \$770,000,000 for the countries of Asia in ratio, military to civil, of two to one. These programmes are 'impact programmes', supposed to produce tangible results in two and a half years (there is a curious American *mystique* about two and a half years') and they are administered entirely by Americans. The attempts at block-bookings ('Take the military with the economic') was not very successful in S.E. Asia. The Indonesian Ministry which signed the military commitments fell and they were repudiated. The Burmese refused the military clauses and Mr. Chester Bowles, then the wise U.S. Ambassador in India, steered his country clear of the kind of rebuff which India would have given to any 'dollars on enlistment' proposition.

Then there is The Colombo Plan. This is a programme based on the British Commonwealth countries in S.E. Asia and agreed by the Commonwealth Foreign Ministers in Colombo in 1950. It had an open-door provision to allow the entry of Burma, Thailand and Indonesia, if they so chose. It was not an integrated plan but a compendium of projects which had already been conceived and were now selected on priority lines. They meant a total expenditure of £1,868 millions in 1951-57. The projects varied from huge multi-purpose, T.V.A. type developments costing tens of millions to small local projects costing a few thousands. It was estimated that when completed, the land under cultivation would be increased by 13,000,000 acres (3½ per cent); production of food grains increased by 6,000,000 tons (10 per cent); land under irrigation increased by 13,000,000 acres (17 per cent) and electrical generating capacity increased by 1,100,000 kW (67 per cent).

This is a heavy investment and heavy equipment programme and its problematical success (before 1957) depends on how far it can 'deliver the goods to deliver the goods'. But much also depends on what The Plan calls 'Technical Co-operation' (a term which I prefer to UN's 'Technical Assistance' because it better conveys mutuality). This is intended to increase the out-

put of men and women trained to implement the schemes from 150,000 to 200,000, to send more students abroad for experience and to recruit some 1,300 overseas experts for work in agriculture, engineering, medicine and education.

In British Borneo and in Malaya there is also the worthwhile activities of the Colonial Development and Welfare Fund.

Mr. David Owen, the permanent chairman of the UN Technical Assistance Board, is rightly anxious that all these schemes should harmonise their activities, and the job of the Resident Technical Assistance Representative on the spot is to 'sit in' with 'Point Four', MSA and the Colombo Plan representatives.

UN Technical Assistance programme got going very modestly in 1948 with a decision of the General Assembly to allocate \$288,000. (Before that FAO and WHO, with UNRRA residual funds, had done a certain amount and Unesco had, from its own funds, helped to initiate a combined project in Haiti.) This anticipated the Presidential pronouncement on 'Point Four' in January 1949 and the General Assembly's endorsement, in November 1949, of a \$22,000,000 programme. This was apportioned between the specialised agencies, but in addition a new agency—'Technical Assistance Administration'—was created. The idea was that the specialised agencies should meet requests in their specific fields. WHO would find doctors and nurses, FAO agronomists, Unesco educational experts—but that TAA should be an all-purpose agency finding experts outside these fields, e.g. a statistician for Afghanistan or a piston-ring expert for Yugoslavia.

So now the specialised agencies were in a position to demonstrate and to take an active role in the field.

For example, Unesco was able to embark on projects which would show what is really meant by 'fundamental education'.

The definition of fundamental education, which I prefer, is 'Creating the climate of literacy'. Literacy is a tender plant which dies quickly (or, certainly cannot grow) if the general attitude is apathetic or hostile. The world is full of lapsed literates, where pupils who have acquired their ABC and a smattering of class-room knowledge find, on their advent to society, that they have no excuse to use them. Another thing to

be remembered is that literacy is the means of communicating ideas—provided that there are ideas to communicate. And a third thing, which I have mentioned before, is the mistake of confusing ignorance with lack of intelligence.

On all those counts, it is necessary to create the climate of literacy, to make people realise that knowledge is worth having, so that they will desire literacy for their children and, indeed, for themselves. And the way that can be done, as Unesco in its programme has recognised, is by interesting people through the fundamentals, which concern their lives and well-being—through health, better results from their soil, better food for their children, handicrafts and so on. The advantage of this approach is that it materially improves the condition of the people while teaching them how much more they could improve it.

Fundamental education projects have been started in a variety of countries—conspicuously in Mexico—and in different forms in different countries in S.E. Asia. Two examples may explain—one in India and the other in Thailand.

Janata College was once a gaol, dating back to the Indian Mutiny in 1857, and in the course of nearly a century it became a police-post, a tax-collecting centre, a private school, a police-post, once again, and then 'Peoples' College' (which is what 'Janata' means in Hindi) when, at the beginning of 1951, Unesco provided some help.

Part of the curriculum of the first course was to reconstruct the gaol, with student labour. The havoc of time was repaired; they got rid of the bugs; they white-washed it; made some furniture and converted the communal cells into passable class-rooms.

The students were drawn from a wide area of scattered villages in Delhi State. They were chosen by their neighbours as the kind of people who were likely to inspire and to lead. The courses were three months long and arranged at periods when the peasants could afford the time.

The courses were designed to give them a new attitude to their own local problems and, since these problems varied from locality to locality and from circumstance to circumstance, the scheme of training, like the minds of the students, had to be

flexible and adaptable. The subjects included: practical agriculture; handicrafts, notably with leather and canvas; civics; animal husbandry; soap-making; health and sanitation; tinning and traffic-drill. An extraordinary assortment!

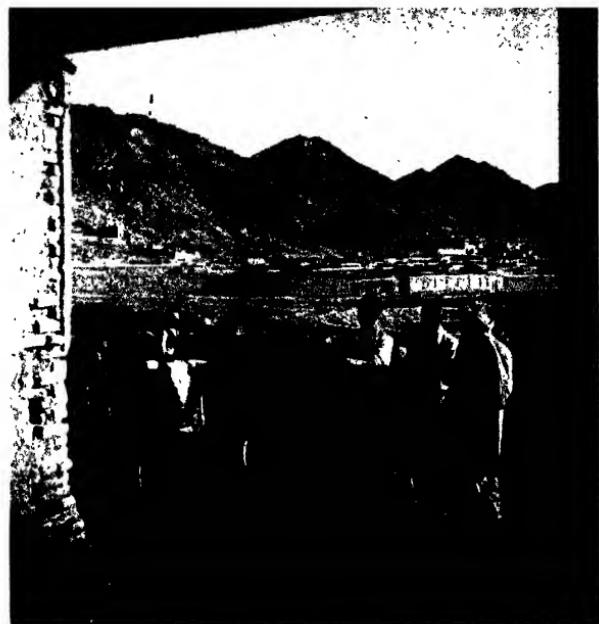
Yet it was all in line with fundamental education principles. For example, traffic-drill: the villagers, taking their produce to market found the Grand Trunk Road and the traffic of Delhi quite terrifying. So they ask to be told about traffic-signs and how best to survive in the mad world of the motor-car. 'Tinning' does not mean anything so advanced as 'canning'; it means coating household utensils with tin. The family pots are handed down from generation to generation and, in the course of a day, they are used for many purposes. The pot in which milk is allowed to curdle may be used immediately to cook something, including lemon juice. Apart from the risks of bacterial contamination, the chemical action causes some of the gastro-intestinal upsets so common among the Indian peasants. Tinning can help.

So the students squatting around the tinsmith in the gaol-courtyard, when we were there, were learning far more than just how to be tinsmiths. They learned why it was necessary and got involved in discussions on food hygiene and nutrition which would all be duly passed on when they went back to their village.

So, too, with soap-making. As they learned how to make soap out of vegetable oils, they were, at the same time, being instructed in personal hygiene. And the handicrafts were, among other things, directed to making school bags for the children they were going to help to become literates.

But class-room teaching was only a fraction of the curriculum. Starting off at dawn, the students moved out into the villages and fields. They began to learn the significance of breaking up the holdings into smaller and smaller plots and how, as long as that went on, no improvement in agriculture was possible. They discovered that, before they could encourage the use of better tools, better seeds, better buffaloes, better irrigation and so on, they must persuade their fellow-peasants to plan their fields, combining the fractions of land into bigger units, pooling their meagre resources, creating producer-, and credit-, co-operatives. Fortunately, in the neighbourhood of Alipur,

ROUND-UP:
Afghan herdsmen brought their beasts to be inoculated in the organised round-up to wipe out the cattle-disease, rinderpest.



BAS-RELIEF: These Henry Moore figures are Afghan women in their *shardis* beneath which the well-to-do wear Paris fashions, nylons and permanent waves.

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11. LONGHOUSE WRESTLING with Jibu who had put an evil spell on the radio-recorder during the rituals in the longhouse

5. CHIEF AUTOR of the North with
Ritchie Calder. The Golden
Buddha seen behind

schwarz and the dancing girls. He
was photographed. The Alphabet
of the Dance



where the college is situated, they had an excellent example to quote because one of the first successes of the college had been to persuade a family, divided by frictions as well as fractions to sink their differences (and also a common well), to join hands (as well as their holdings) to make a reasonably sized farm-unit and to take advantage of all the ideas the college had to offer. The results were eloquent enough to convince others.

In fundamental education the good must never be sacrificed for the best. It would be nice if everyone could have tractors and modern implements right away, but it would have been fatal for Janata to encourage over-ambition in a penurious community because that could only produce frustrations. Instead they encouraged improvisation, adapting modern ideas. For example, a bulldozer might be out of question, but why not a 'bullock-dozer'? When the land was combined into a bigger unit it was possible to level and grade it by bulldozer methods, but instead of a mechanical titan, they made a metal scoop or tray, which, with bullocks pulling, achieved what a bulldozer would have done by pushing.

There was a doctor on the staff to teach elementary hygiene and, very cautiously, the problem of the segregation of women and the inequality of the sexes was being tackled. And, as always, the easiest way to broach this problem was through the care of mothers and children.

The influence of Janata does not end with the set-courses. The students go back to start similar courses in their own villages. One of the things which the college has developed is a central library of books, which can be borrowed by the villages, so that the literates can read to the illiterates and encourage them to read and to write. It was most inspiring to see a student at the end of a course packing his trunk with books, heaving it on to his head and starting off on foot back to his own village, to start his educational mission.

A most important aspect of Janata is the Old Boys' Association, through which the ex-students meet regularly and from which the college teachers learn how 'fundamental education' is working out in practice and what modifications may be necessary.

When we visited Janata, Dr. Spencer Hatch and Mrs. Hatch, the American educationists who had helped to start the

project, had moved on to Ceylon to start another there. It was interesting to see how the Indians under their own principal, Mr. Shive Charan Das, were converting Western theories to Indian practice. They were doing very well in spite of the fact that their pathetic incomes bore little relationship to international scales of salaries.

The other project was in Thailand, in a Buddhist monastery at Chachoengsao and was part of the ten-year programme agreed between the Thai Government and Unesco. This included a complete reform of the existing system of education, a reorganisation of the training of teachers and fundamental education.

Mr. Thomas Wilson from New Zealand was sent by Unesco, arrived in November 1950 and spent several months studying the schools throughout the country and looking for an area which might be regarded as embodying the typical problems of Siam. He chose Chachoengsao, a district about sixty-five miles from Bangkok. It is a rice-growing district, with fruit-farming, small industries, coastal fisheries and a jungle hinterland. It is also one of the poorest regions and has the lowest literacy rate, in a country which boasts universal and compulsory education but only on paper.

The monastery was decided upon because again this was typical. Traditionally, teaching was a function of the monks, and the schools are still associated with the temples and monasteries although lay-teachers are employed. We saw some of the temple schools with their lay-teachers, and while they were colourful and, from a visitor's standpoint, romantic, I could sympathise with Wilson's dismay at the content of education and the methods of teaching.

It is nice to go into a temple and in the tree-filtered sunlight hear the leaf-bells tinkling on the upraised eyebrows of the pagodas. And then to hear the silence drowned in the chanting of children's voices from the verandah classrooms. It sounds like a conflicting series of choir rehearsals until one is told that this is the children learning their lessons, *en masse*, by chanting by rote. And, apparently, the lessons just do not 'stick'.

When the pilot project was set up at Chachoengsao, in January 1951, it was planned to include fundamental and

adult education; vocational training; teachers' training; primary and secondary school; health education; physical education; and music. The argument might well have been that fundamental education must be applied even to the class-room teachers. They were, traditionally, a class apart and only by getting them actually to work with the people on a 'Dirty Hand' basis could the essential reforms of Thai education be brought about.

The people of the district were brought into the scheme but teachers were also selected to come from all over Thailand. FAO, WHO and ILO were all interested through the fundamental education projects, in better farming, health teaching and the development of rural crafts.

This project, as one can see, differed from Janata, since the one was concerned with the simplicities of the approach to the illiterates and the other was aiming at the eventual reform of an entire educational system.

Unesco has also sent in experts in visual aids to S.E. Asia, to help in reaching the mass of the people. Perhaps, as a visual aids enthusiasts, I was too simple-minded; I had glibly assumed that one short-cut would be to make available to these countries not only equipment but also the abundant materials which the West has already produced in the form of picture-sheets and posters; film-strips and documentary films. Now I know that, for visual aids to be of any use, the countries themselves must produce them in their own idiom and by their own techniques. The most that can be offered from outside is equipment and technical experience.

This was impressed upon me in Indonesia. A village crowd had gathered round a mobile cinema van and were laughing uproariously. I thought it must be a comedy cartoon or something but it was a small boy drinking milk in an American health film about nutrition. 'What's so funny?' I asked the Indonesian who was with me. 'Can't you see?' he said. 'There's a small boy with blond hair, with a jersey with horizontal stripes, wearing jeans and drinking milk out of a bottle through a straw. The people here have never seen such an "albino"; never seen a funny jersey like that; never seen jeans; and never seen milk in a bottle. Maybe they've never seen milk drunk, except

milk from a coconut. All they have ever seen is the straw because they grow rice. See, with their eyes, how funny it is!'

'But what purpose does it serve, then, to put a film like that on?' I asked. 'A very useful purpose,' he said. 'It is an up-to-date method of getting the crowd together. Before we were given these mobile cinemas, we just had the village gongs. Now people come from miles around. We show them what films we've got—then we send the van away and tell them the facts we want them to know. And that is how it will be until we can show films of people like themselves behaving like themselves.'

It is comforting to know that Indonesia has, in fact, an extremely lively and enterprising film-making service.

When I first saw the apparently heterogeneous collection of requests which Governments had made upon UN Technical Assistance, I was dismayed. It seemed as though the Governments, receiving the prospectus of the kind of services which UN could offer, had thumbed through it like a mail-order catalogue and had ordered at random. Our itinerary only touched a fraction of the projects and they were selected with some care as being typical and giving a sense of pattern. But, in the field, even the 'random' choices usually made some sort of sense. A ceramics expert for a rice-growing region may seem a low priority until you see the relationship between reviving of a decayed local industry and the drawing-off of under-employed peasantry as a pre-requisite of farming improvements. A meteorologist may seem out of place among the tribesmen of Afghanistan until you are confronted, as we were, with the risk of being stranded because the country cannot have an air-service until it has weather-guidance. Those Tyrolean scythers sounded laughable as a formal request from a Government to the United Nations, but think what in fact it meant in practical results—more than could have been achieved by sending in fleets of tractors. Of course, there are absurdities; like the Government which ordered a statistician and asked him, forthwith, to produce a statistical report 'out of the hat'. They had no statistics, so his job, apparently, was to invent them!

The programme, as we saw it, did 'add up' to a sum of human betterment. The projects were conferring direct benefits on the peoples of the districts directly affected by the demon-

strations but they were also tangible proof of the benefits which could be conferred on millions more.

Consider what the lessons of malaria control in, say, Thailand can mean to the 300,000,000 malarial victims in the tropical world; what the lesson of the *terai* can mean in the recovery of jungle; the vast implications of the experiments at the international Rice Research Station or how hungry, ill-nourished peoples may be saved by the breeding of the *tilapia* fish. . . .

They are all pointers to the even bigger things which are possible if mankind can use its common intelligence for its common good.

The Progress

A YEAR had passed since the last case of yaws had been cured in a village in Central Java. Babies had been born into a little world in which, for the first time, their lives would not be made miserable and shortened by this painful, disfiguring, dispiriting disease. Youngsters had almost forgotten what it had meant. But the grown-ups remembered and decided to celebrate their own *re-birthday*. That, in Java, meant just one thing— a feast.

Everyone contributed. The boys shinned the palm trees to collect the coconuts. The men brought the fish and the rice. The women plucked the chickens.

The headman beat the gong—that same gong which had called the people to the emergency clinic when the teams had moved in a year before to administer the penicillin. On that occasion a silent procession of sufferers had crept and crawled and carried their yaws-sick infants. Now, in response to the summons, they came laughing and chattering, skipping and jumping. The *gamelin* band beat out the tunes and old and young joined in the dancing—the almost forgotten dancing. People who had been cured boasted about the size of the yaws-ulcers they had once had. Like the veterans of a war that had been won, they showed their scars. The local ‘comic’ put on an act, imitating the walk of the claw-footed yaws’ victim. And the villagers roared with laughter, the gusty laughter at a remembered nightmare. The men put on a dumb show, in which they mimed the slow-motion harvesting of the rice, when they had yaws, working up, with the tempo of the *gamelin* band, to the prodigies of speed with which they could now reap. The prematurely old shed their years and romped with the youths and maidens.

They sat down to the feast, and at that feast there were

heaped plates which were left like sacrificial offerings. They marked the vacant places of the United Nations' workers who had moved on to give cause for similar thanksgiving in a thousand villages.

Progress has been made. Three years before this celebration, Mr. Sam Keeny, the director of the Asian Regional Office of UNICEF, the UN Children's Fund, had flown into Java for the first time. He had never seen a case of yaws but what he saw of this complaint, which afflicts over 10 million Indonesians, appalled him. As he said, 'Imagine having a boil and then another and another until you have dozens. Imagine having them on the soles of your feet so that you cannot walk and on the palms of your hands so that you cannot work. And imagine going on having them year after year....' And he recommended that the Children's Fund should assign \$1,200,000 to a programme to remove this affliction by that miracle which is penicillin.

Optinism had to be tempered by experience. That the miracle could be worked, there was never any doubt from the start, but to organise treatment on the scale of a military campaign needed time. In the first twenty months, progress was slow although the localised results were spectacular. But the experience gained enlarged not only the opportunities but the demands, because good news of this kind travels fast, even into the remote islands of an archipelago, even into the heart of Borneo.

By 1953, the methods of attack had been simplified. More and more teams could be put into the field until 150 'Yaws Commandoes' units were operating and another 150 polyclinics were under way. The facts were plain: Yaws can be cured by penicillin; the cure is quick; it can be done with a single dose; the method requires few doctors and no hospitals; the cured adults can go back to work quickly and support their families; the faster the work goes, the less the disease spreads; and it is cheap and getting cheaper.

For instance, up to the end of 1951, the cost of treating a case was about £1 (\$2.75 U.S.), UNICEF paying about ten shillings (\$1.32), the Indonesian Government meeting the rest. In 1952, the cost per head dropped to 16s. 6d. (\$2.20)

with the UNICEF share about 7s. 6d. (98 cents). But in 1953 with a drop in the cost of penicillin to almost a third of the price, and with improved methods, two cases could be treated for the price of one the year before.

At the same time, however, the programmes expanded to the extent of having to double the number of treatments. The very success of the programme seriously embarrassed the limited finance of UNICEF. (U.S. funds for Indonesian public health were already very properly committed to control of malaria which dangerously reduces the production of rice. This is an example of a useful relationship between UN and U.S. Mutual Security. Similarly in Thailand, M.S.A. undertook the extension of the malaria control work of WHO-UNICEF, while the latter concentrated on Siamese yaws.) The difficulty in Indonesia was solved by the Government agreeing not only to carry its own additional burdens of personnel and facilities but to meet a third of the cost of penicillin provided through UNICEF.

Progress in the Indonesian yaws campaign meant that in three years, from the inception of the campaign in May 1950, nearly 700,000 cases had been treated by injections of over 4,000,000 ccs. of penicillin. By the time the original grant had been expended that would mean 1½ million people treated and the number would be accelerating at the rate of a million treated cases a year, as a result of the improved methods and organisation developed through experience.

Consider what this means; by an injection of penicillin costing less than one packet of cigarettes, a human life can be transformed; and at a total cost of less than one jet bomber a year a country can be delivered from this nauseous disease.

By the end of 1952, 10½ million people had been tested for tuberculosis in S.E. Asia and 5 millions protected against malaria by UNICEF DDT. And this was only a sample of what could be done. Each of the demonstration projects meant that the countries themselves then took up the task, with personnel thoroughly trained by international experts and by the experience gained in the operations.

In October 1952, Her Royal Highness, the daughter of the Prime Minister of Afghanistan, and cousin of the King, gradu-

ated as a maternity nurse and delivered her first baby, 'all on her own', at the new maternity hospital in Kabul. She and her sister were the pupils of Dr. Gade, the Danish obstetrician from WHO. To anyone who knows the low esteem in which midwives are held in this part of the world, this was an item of progress as momentous as the clearing of the Kundus of malaria.

In the beginning of 1953, Dr. Jean Orkney was reporting from the nurses' training college at Lahore, where Tabinda had so daringly unveiled her face, that there were three times as many applicants as there were places. In the slums and villages of India, high-caste Brahmin women were adopting a role more humble than that of the outcast sweeper and were serving their womenkind.

The work which we had seen Nurse Peggy Cannon start in the pagodas around Chiengnai was winning over more and more of the *moh-tam-yaes*, the untrained village midwives. Every male or female midwife who undertook to report, within 24 hours, every baby delivered, was given a 'kit'—some soap, a nail-brush, cotton-wool, disinfectant and a pair of scissors. 'Irregulars' were gradually becoming the useful auxiliaries of the increasing number of trained maternity nurses, emerging from the scheme.

So, by international example, *purdah*, *zenana*, and all the age-old abuses which segregated and sacrificed women were being broken down. The Florence Nightingales of the East were defying the traditions of their castes and class and emancipating their sex.

Behind the doctors and nurses, the work of consolidation went on. International aid could not indefinitely replenish the supplies of B.C.G., animal vaccines, penicillin and DDT, from Western sources. The region must somehow contrive to become self-sufficient in such things, not merely on the principle of self-help but in case there should ever be a shortage of Western supplies. DDT was a case in point. Without supplies to maintain the preventative services, regions, which had been delivered from malaria, would be in a parlous situation. While malaria had remained in endemic form it had weakened the people and killed them slowly, but once they had become unaccustomed to malaria, a reinfection of the countryside by the malarial

mosquitoes could mean deadly epidemics. As was said at the WHO General Assembly, 'The embers of malaria are kept damped down by DDT. Without supplies, the disease would rage like a forest fire.'

The United Nations' agencies also helped to establish B.C.G. manufacturing laboratories and institutes for vaccines for rinderpest and sheep and fowl disease. UNICEF advanced funds for imported equipment for a penicillin and anti-biotics factory in India and for DDT factories in India, Pakistan and Ceylon.

Where countries could not multiply their herds or have factories capable of supplying dried or processed milk, the international experts encouraged the production of soya and helped with advice as to how this valuable bean could be made a palatable substitute for UNICEF milk.

The malaria control demonstrations can be repeated *ad infinitum* when there are enough people trained by international initiative and when supplies of the insecticides are available. But the emphasis must be on *trained* because the national experts who continue and extend the work must realise the risks of fresh invasions of mosquitoes; must watch for new types or for old types which may have acquired DDT-resistance; must sound the tocsin at the first sign of enlarged infantile spleens and be able to identify and study the habits of the possible carriers. When the shock-troops have moved on the medical garrisons must remain alert.

Similarly with jungle-clearance schemes, it is incumbent on the international experts to leave behind them nationals as expert as themselves. It is not enough to expose that rich black soil of a thousand-years-old jungle. The people must realise what can happen to that soil if it is wrongly used, if too much of the natural vegetation is cleared and if the sun and the rains are allowed to wreak havoc. It is by the measurement of how many and how well, the UN experts can train, that their results must be judged. It is the lasting effect and not the spectacular 'impact' that matters.

It was necessary to remind a flamboyant Western expert who was boasting about how he would show 'them' what modern technology could do: 'Okay! Do it your way! Put on your gadgets and your mechanical tricks! Stage your three-ring

circus and make them gape. And when you move on all you will have left behind you will be the sawdust.'

The best results are not necessarily dramatic or impressive. The engineer who builds a dam has more to show in a few years than the forester who plants a tree, but a few years later the engineer's dam will be silted up because the forester in the mountains did not plant the tree. And because that tree was not planted the well-laid schemes of the agricultural expert to improve the farming of the lowlands will be drowned and the public health measures of the doctors will be lost in the diseases which follow the floods.

This analogy is peculiarly relevant in South-East Asia where considerably more than half the population is concentrated on the banks of rivers, on the deltas and on the coast. They are dependent for their survival on the whims of those rivers—the water that comes too early or too late, too high or too low, the spate or the drought. That concentration, too, is what we usually mean by the 'densely populated East', forgetting that in relation to the hinterland and the uplands, the population per square mile is nothing like so dense as it is in Europe. By the diversion of waters and the recovery of deserts and jungles the picture of population distribution could be radically changed.

ECAFE, the United Nations Economic Commission for Asia and the Far East, has shown that, from all the existing knowledge it has amassed, ninety-five per cent of the area has not been geologically surveyed and that of the remaining five per cent only half the natural resources had been developed. That is what we mean when we speak of 'The Wealth of the Indies'!

If this low proportion is surprising, it becomes comprehensible when one reads Professor L. Dudley Stamp's *Our Under-developed World* (Faber, 1953). He tells how when he went to Burma many years ago to prospect for oil in the Chindwin River basin, he was much excited to find a hill which seemed to be a solid mass of iron ore.

'I rode back two days' journey to the nearest telegraph, sent cables to secure a prospecting monopoly and advised my head office in Rangoon of my action. The reply from headquarters came quickly. It read, "What on earth do you

think is the good of iron ore in the Chindwin stop get on with your work." Thus I learned that accessibility is a factor of great importance in assessing the value of an ore deposit.'

Resources remain undeveloped because a country is undeveloped and a country remains undeveloped because its resources are undeveloped. Beneath a jungle may be fabulous resources but until that jungle and all that it means, including the diseases which beset it, is tackled, they cannot be reached.

We are back on The Gorgas Theme: *You cannot build the Panama Canal until the isthmus is cleared of yellow fever.*

And just as important as uncovering the resources of the earth is the importance of releasing the innate resources of the people themselves.

'The control of disease is a precondition of economic and social development. The advance of any community depends on the extent to which it reduces the burden of ill health which squanders human resources, wastes food in nourishing bacteria and parasites, produces social lethargy and prevents peoples and countries from developing their full capacities'. (Preliminary Report on the World Social Situation, UN Economic and Social Council. Chap. III.)

We have seen how people respond to better health by trying, like those peasants in Java chiselling through the volcanic rocks, to get better food; how they find a new urge for education, which is quite spontaneous and only needs abetting; how they begin to practise self-help and to find new interests in life.

'Backward peoples,' we are told, 'are naturally lazy.' Try being energetic when you are full of malaria, hookworm, and yaws! 'They are stupid.' How can we measure intelligence which is numbed by hunger and ill health? The truth is that they are neither lazy nor stupid—They are sick. Give them a chance and they will fulfil the prediction that Surgeon-General Gorgas himself made that, given freedom from disease, tropical regions would become the centre of as powerful and as cultured civilisations as any that exist in the temperate zone.

As Dr. W. S. S. Ladell said at the symposium on desert research which we attended in Jerusalem in May 1951:

'The debt we owe to the ancient "warm weather" vultures has been forgotten and men from northern climes, ignorant of their own history, have come to consider it axiomatic that

their own cultural brothers bred in southern latitudes are inferior in capabilities and energies to themselves. . . . The myth of the inherent superiority of "cold climate" to "warm climate" man was bolstered by the relative impoverishment of southern countries with a consequent low standard of living and spread of disease.'

For me, the South-East Asia mission was a 'Journey into Hope' because it showed what could be achieved by people who were prepared to work together in genuine partnership, and by real 'mutual aid' in which man was not trying to take advantage of his brother but share experience and knowledge with him.

Some may think, with what they like to call 'realism', that this is not hope but wishful-thinking. 'Where,' they will ask, as others have done, 'are we going to get all the experts when these programmes expand?' or 'How are we going to feed all the people the doctors are saving?' or 'Where is all the money going to come from?'

It is true that the real technical assistance expert is still a rare bird, because, as has been emphasised already, he has not only to be an expert in his own field but he has to know how to get along with people of different colour, culture, outlook and level of training from himself. He has to save something of that complete self-subordination and dedication which characterises the true missionary. ('Even if he is building a bridge, he has to have something of Albert Schweitzer in him.) In some cases, I found, the standard of *expertise* was probably too high and that someone less eminent (and younger) would have been better. And it seems to me that now that the pattern of future requests is emerging fairly clearly, the Technical Assistance Board and the agencies should be ear-marking young scientists and technologists, who would start rather than finish their careers in international service. It would call upon young men and women, with a sense of vocation, teachable and adaptable in this business of understanding people. There would be no shortage of them, judging by the students who clamour round me in the universities, asking how they can get into UN work of this kind. Technical Assistance is not a career but a contract assignment, and younger personnel are

not beset by family commitments and anxieties about super-annuation which deter older experts. This does not mean that they can go in as raw recruits, they must have experience as well as academic qualifications but it should be that degree of experience which they could pass on to those less qualified than themselves. They should have some real background of the people they are going amongst, not reference book stuff, but sociological. That would mean an extension in our universities of what we call the 'Social Anthropological Departments', which I should like to see renamed because, as I found, people in South-East Asia object to being regarded as 'specimens'. ('I am going to organise a social anthropological expedition to the United States, one of these days,' said a Javanese official to me.)

The Dutch, seeking what has been called 'The Moral Equivalent of Empire', have set about this the right way. The Queen has handed over the Royal Palace at The Hague to become 'The Institute of International Social Affairs'. Here residential courses are held for fellows from the under-developed countries of post-industrial or higher-administrative levels) and with them, for shorter periods, are trained the technical experts who are going out from other countries to give assistance. At The Hague, they live and work together and create the proper relationships and understanding.

It has also to be remembered, when considering the availability of recruits that the United Nations can, and does, turn to its recruits to any country - including the under-developed territories themselves.

To answer the neo-Malthusian arguments adequately would require another full-length book and here I am going to venture a series of dogmatic statements.

It is intolerable, indefensible and impolitic to suggest that the benefits of modern medicine and scientific advance should be withheld from any section of humanity. If people are condemned to live like animals, they will breed like animals.

If they are helped by medical measures, they will not breed more prolifically, only fewer will die and more will live longer.

As their standard of living increases, the size of their family units will diminish.

Family planning, or limitation, will depend upon the women, and the only way to reach the women, to give them self-respect and raise them out of ignorance and subjection, is through such things as mother and child health services. This does not mean, in the first instance, indoctrination of birth-control methods (WHO has been barred by the Roman Catholic member-states from even discussing this), but it means that women begin to think about themselves and for themselves.

There are no insuperable barriers in the religions of S.E. Asia to the limitation of families and Nehru, in India, is doing what he can to encourage it.

If the practice of child-marriage could be stopped, the marriageable age advanced, and girls could find careers, a good ten years could be cut off the reproductive period which would compensate, at least, for the extension in the span of life of women. Here again it is a matter of better education and better opportunities for women.

'Overpopulation' is a relative term. Localities may be 'overpopulated' in measure of their food-production (India is overpopulated in terms, not of its area, but of its low yields), but S.I. Asia, in large, is not overpopulated. Java is too densely settled, but the rest of Indonesia is sparsely settled.

The relation of population to food-production can be redressed by increasing the yields from the existing acreages (Chapter 8); by recovery of more land for cultivation (Chapter 9); by removing disease so that bread-winners can better support their families (Chapters 2 and 5); by intensifying production by innovations, which can be adapted to traditional methods and by drawing the under-employed population off the land.

'In India,' says Dudley Stamp, in *Our Undeveloped World*, 'agricultural production remains at a relatively inefficient level because of the vicious circle in which the cultivator is entangled. He is poor; therefore he cannot buy efficient implements or fertilisers; he plants his seeds laboriously by hand on land which he has sown with his ox-plough. He himself, his

family and his animals are under-nourished, lacking energy for hard work. Because he cannot afford to buy fuel for cooking, he burns the dung of his cattle, the only available material, thereby robbing the land even of animal manure. Consequently his crop yields are low; he needs nearly all his produce to feed his family and his few, poor animals and he has no surplus for sale. Because he has no surplus for sale he remains poor and his poverty is increased by his usual indebtedness to the money-lender and by the incidence of such heavy expenses as providing marriage dowries for his daughters.'

Ah! (say the pundits) the inevitability of poverty. But there is no inevitability in such poverty. The whole purpose of FAO, aided and abetted in this connection by Unesco and ILO is to break that vicious circle and turn it into an upward spiral. In India, and again in Afghanistan, we saw how that process can be modified by the introduction of the most simple devices, forerunners of better equipment and improved methods but, in themselves, enough to matter. Rural extension services and co-operatives and other advances, relying not upon great enterprises but upon the people themselves, can accelerate improvement. And consider, in reference to Dudley Stamp's point about cow-dung as fuel, the changes which might come with such a device as 'The Nehru Stove', a cooking arrangement employing solar energy by means of mirrors, which the Indian scientists are developing as a low-cost source of domestic heat.

On the bigger canvas, the Colombo Plan provides a programme for India, Pakistan, Ceylon, Malaya and British Borneo, which, if it were effectively completed, could by 1957 increase the land under cultivation by 13,000,000 acres; put seventeen per cent more land under irrigation; increase the food-grains (mainly rice) by ten per cent; and, at the same time, increase by sixty-seven per cent the generation of electricity to provide energy for industry.

Where is the money to come from? It depends upon what it is we are costing. If it is technical assistance, which means experts and training and a limited amount of equipment for demonstration purposes, then U.N.T.A. is at present functioning on a budget of £7,000,000. As its services expand it will need more,

but 'Technical Assistance' is of that order, and not to be considered in thousands of millions.

But Technical Assistance is only the priming. It is useless without the means to follow-through with the large-scale developments it makes desirable and possible. And then we really are in the realms of thousands of millions.

The United Nations' Experts' Committee estimated that to make an appreciable advance, Asia (not just S.E. Asia) would require a total *annual* investment of \$13,000 millions (£4,640 millions) of which \$2,016 millions (£720 millions) would be for agriculture and the rest for industry.

A proportion of this could come from domestic savings in the countries themselves (the estimate for all under-developed countries is \$5,000 millions), and this proportion as far as S.E. Asia is concerned could, on the findings of ECAFE, be considerably increased if the peasants had any faith in banking systems and were prepared, even with their individually small surpluses, to save instead of 'hoarding' (which seems an exaggerated term for their pathetic collections of jewellery). On the best estimates, however, the Asian countries would have to look for help from the developed countries to the extent of about £3,500 millions a year.

For the whole of the under-developed countries it would be of the order of £5,000 millions, which seems an impossible figure unless one thinks of the astronomic figures now being spent by the Great Powers on rearmament or unless it is related to the national incomes of the developed countries. The aggregate national incomes of Western Europe, the United States, Canada, Australasia is about £125,000 millions and 3 per cent of that would yield the necessary capital. That is not starry-eyed because between 1907-13 the United Kingdom was exporting capital at the rate of 7 per cent of the national income per annum.

The UN Experts' Committee proposed three major recommendations:

(1) That the International Bank should set itself the objective to be reached within five years of lending \$1,000 million annually to the under-developed countries;

(2) that the United Nations should establish an International Development Authority which would distribute grants-in-aid;

(3) that the United Nations should explore the possibility of establishing an international finance corporation to make equity investments and to lend to private undertakings operating in the under-developed countries.

The Committee also underlined what has been the burden of the argument of this book:

'In our opinion most under-developed countries are in the situation that the *investment in people* is likely to prove as productive, in the purely material sense, as any investment in material resources, and in many cases investments in people would lead to a greater increase in the flow of goods and services than would follow any comparable investment in material capital.'

And by 'investment in people' is meant social improvements such as health and education.

This is the great challenge and the great opportunity. As Lord Boyd Orr says in *The White Man's Dilemma* (with David Lubbock, Allen and Unwin, 1953):

'Will Governments co-operate to apply science to promote the welfare of the peoples of the world, or, in rival groups, apply it to their mutual destruction? If moral and ethical principles were the guide to foreign policy there is no doubt what the answer would be. The aggression of hunger and poverty which causes the premature death of two-thirds of the world is a greater menace to health and happiness than either Communist or Capitalist aggression. Apart from moral principles, intelligent self-interest should induce the highly-industrialised countries to co-operate in abolishing hunger and poverty, for these are the growing threat to the security of the prosperous third of the world population, and to world peace.'

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